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MOTOR WORLD

A Trade Paper Giving the World's Motor News

Vol. XXXVI
No. 1

New York, June 26, 1913

Ten cents a copy
Two dollars a year

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Any Manufacturer Can Test The Hartford Starter Without Redesigning His Car

With most electric starters the car manufacturer is beset with the difficulty of altering his car's design to try them out.

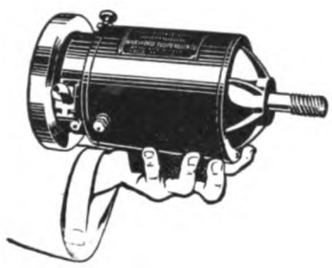
This difficulty has been entirely overcome in the Hartford Electric Starter which can be successfully applied to any car in use without a single structural change. The wonderful compactness of the Hartford Starting and Lighting System makes this practicable.

While our buyers are clamoring for lighter weight cars, they are also demanding electric starter equipment. In the case of many manufacturers this has meant an increase in their car's tonnage, which has produced an under-tired car.

Consequently the demand of manufacturers, designers and engineers is for a starter that is of proven efficiency, yet of extreme light weight.

It remained for Mr. E. V. Hartford, the inventor and designer of the

Hartford Electric Starter



to couple the greatest power with the least weight and offer to manufacturers an electric starting and lighting system which is light, powerful, silent and trouble proof.

No manufacturer is asked to take these claims for granted.

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Send for interesting booklet giving history of Self-Starters

Every Buyer Should Specify the Hartford Starter for His New Car

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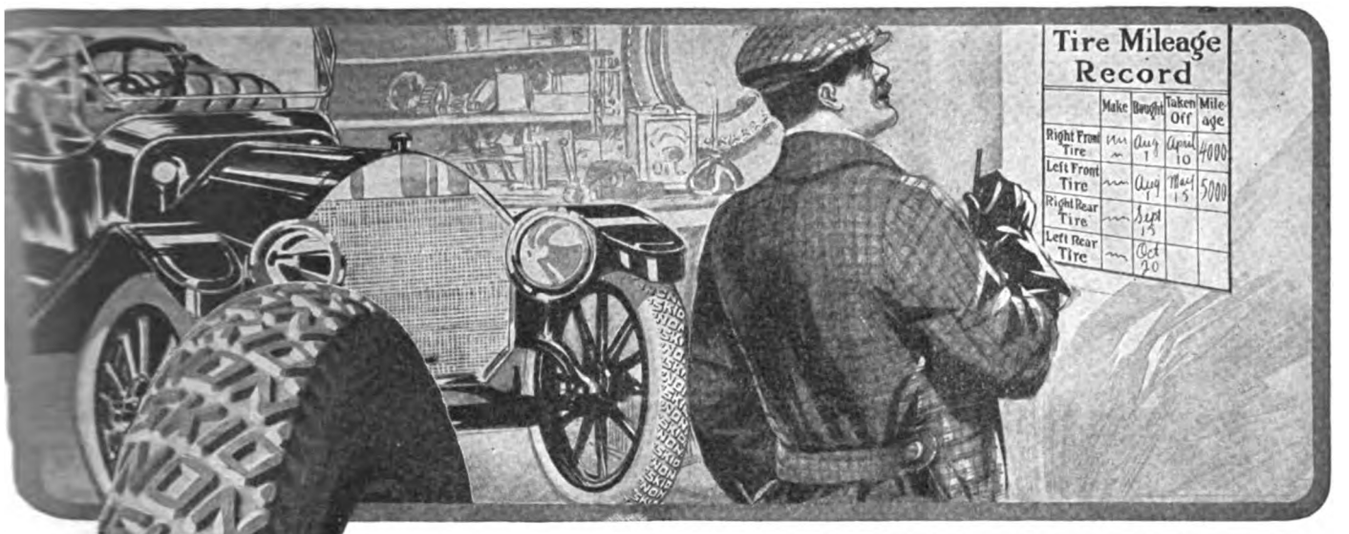
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The Tires That "Make Good" Are The Tires That Make Sales

CAR OWNERS who keep a record of their tire mileage, and car repair bills, are the largest users of Firestone Non-Skid Tires. They have checked up results in road service and proved Firestone economy and satisfaction.

Every Firestone user thus becomes a Firestone booster—and the Firestone dealer profits accordingly.

The reasons are found in the extra thick, extra tough, extra "lively" Firestone tread and body construction. Maximum mileage given is one result. Other advantages are: Gasoline consumption reduced by secure road-grip, increased traction. Car repairs reduced because the thickness and quality of rubber in the tire absorbs the constant vibrations of irregular going.

And added to all this is freedom from road worries.

The book, "What's What in Tires," by H. S. Firestone, gives the reasons in straight-forward, readable fashion. A postal brings a copy.

The Firestone Tire & Rubber Co.

"America's Largest Exclusive Tire and Rim Makers."

Akron, Ohio **All Large Cities**

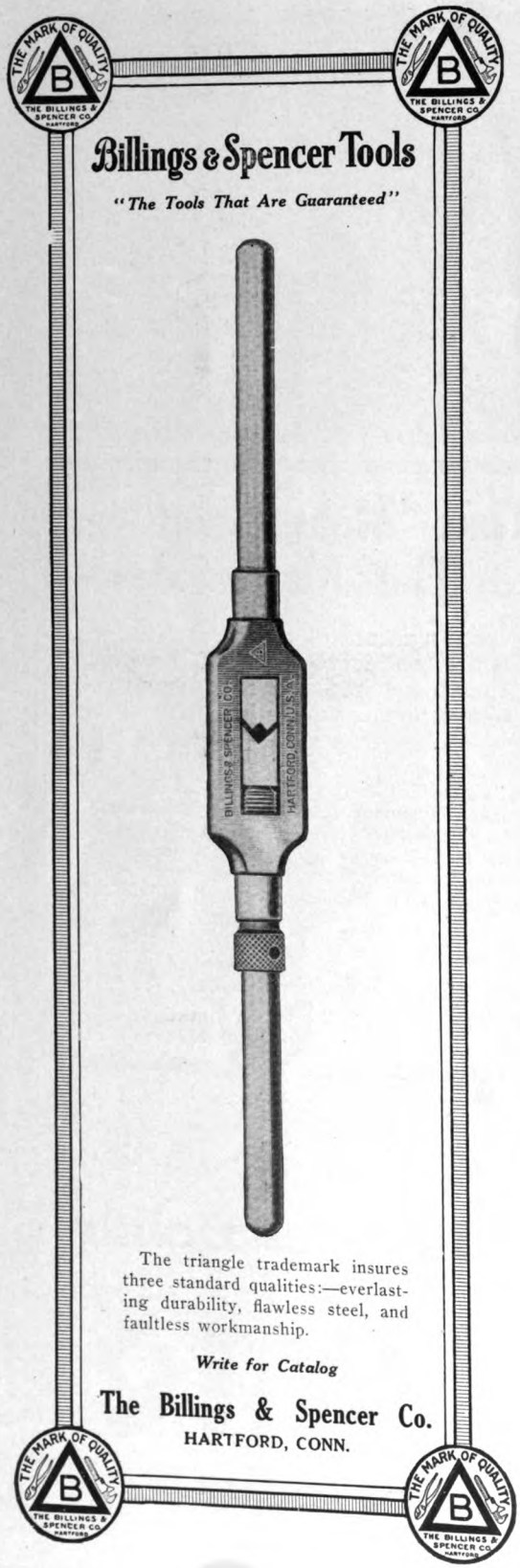
Firestone pneumatic tires are guaranteed when filled with air at the recommended pressure and attached to rims bearing either one or both of the following inspection stamps. When filled with any substitute for air or attached to any other rims than those specified, our guarantee is withdrawn.

Most Miles Per Dollar

Firestone

NON-SKID TIRES

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¶ Every oil manufacturer claims his automobile oil is best; some even say "Take a sample of ours to any chemist and have it tested" to try and prove their statements, but they know full well that no one would go to the trouble, bother and expense to do this and thus they hope to "get away" with their statements.

¶ But please just remember that

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has been continually successful under that one brand name since the very start of the automobile industry and we honestly believe the Test of Time amounts to a great deal more than the claim every other oil manufacturer quite naturally makes about his oil being "best."

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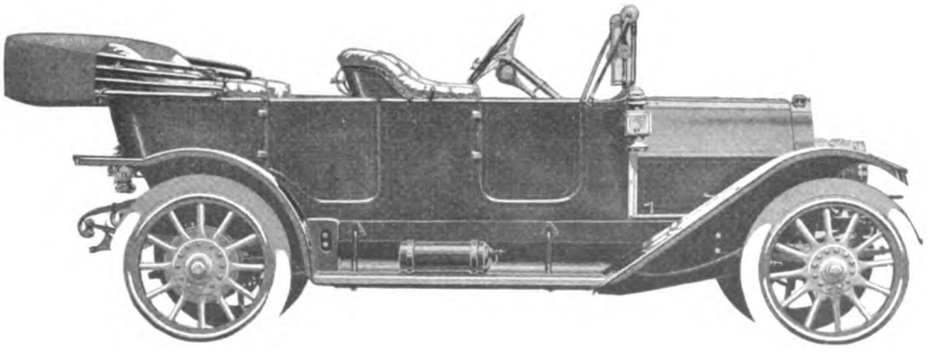
COMPLETELY comfortable, a masterpiece mechanically, the big, sturdy, thirty horse-power, five passenger Overland touring car furnishes daily motor car gossip as the greatest value for the least money.

Catalogue on request. Please address Dept. 50.

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MOTOR WORLD

Vol. XXXVI New York, U. S. A., Thursday, June 26, 1913 No. 1

NO MORE HUDSON "FOURS;" MANY CHANGES IN "SIXES"

Left Drive, Center Control, Sloping Hood, and Dash Tanks Among New Features—Dash Lamps Are to Be Eliminated.

Those "48 engineers" of the Hudson Motor Car Co. have not been idle during the past "engineering season." As a result, the Hudson cars that now are being made ready for the market will differ markedly from their predecessors. In fact, there will be no more Hudson "fours"; their manufacture will be discontinued and the Hudson effort will be concentrated wholly on "sixes."

There will be two of the latter, a big "six," listing at about $2,250, and a smaller one, which will be cataloged at about $1,-550. Both in appearance and construction, they will differ considerably from the present Hudson "six," a slightly sloping hood and rear springs hung under the axles being two innovations which will instantly catch the eye.

The Hudson people have also been converted to left drive, center control and dash or cowl fuel tanks, all of which will be features of the new models. In addition, they will be characterized by longer wheelbase and built-in windshields, while a radical departure will be made by the elimination of dash lamps. Instead, there will be employed a device which will permit the headlights to be dimmed at will. For lighting and starting, the Delco electric system will continue to be utilized.

Prest-O-Lite Decision is Sustained.

The Appellate Term of the Supreme Court for New York county yesterday, 25th inst., affirmed the decision of the Municipal Court, which held that the refilling of a Prest-O-Lite tank with other than Prest-O-Lite gas and the selling of the same is grounds for the recovery by the plaintiff of a $100 penalty for each case. The actions were brought under the New York State law by the Prest-O-Lite Co. against Smith-Haines and the Brickner Auto Supply Co., metropolitan accessory and supply firms.

Ford Declares a Modest Dividend.

It's true—that story telegraphed broadcast from Detroit late last week to the effect that the Ford Motor Co. was preparing to carve by far the most luscious "melon" ever known to the automobile industry—one of ten million dollars—count 'em, t-e-n; all cash, too. The distribution was made this week, the poor fellows who received the large checks being as follows: Henry Ford, $5,800,000; James Couzens, $1,150,000; Dodge Bros., $1,000,000; the Gray estate, $1,050,000; John W. Anderson, $500,000, and H. H. Rackham, $500,000.

Klaxon Proceeds Against Square Horn.

The Lovell-McConnell Mfg. Co., of Newark, N. J., maker of Klaxon signals, has lost no time in proceeding against the recently organized Square Motor Horn Co., of New York. It has filed an action in the United States District Court in New York, alleging that the Square horn is an infringement of the Klaxon patents Nos, 923,048, 923,049 and 923,122. The Salvini Electric Horn Mfg. Co., which is related to the Square Horn company, is also made party to the suits.

October Dates Chosen for Paris Show.

For the first time, the Paris Salon will precede the Olympia show in London, October 17th to 27th having been selected as the dates for the French exhibition. As it is open on Sundays as well as weekdays, this means that it will run for 11 days. Previously the Paris show occurred during December and remained open for three weeks.

Goss Goes Abroad on Largest Ship.

A. H. Goss, of the Detroit Demountable Rim Company, sailed yesterday noon on the Imperator. He will spend 30 days in Europe.

SENATE FILES TEETH OF UNDERWOOD TARIFF BILL

Upper House Renders Bite of Revenue Measure Less Sharp — Adds Ten per Cent. to Parts and Reclassifies Complete Cars.

If the House permitted to pass unheeded the pointed language and not easily forgotten why-kill-the-dog-now-that-we-have-got-all-the-fleas-off-of-him plea entered by the 27 automobile manufacturers who joined in the protest to Congress against the reduction of duties proposed by the Underwood tariff bill, the plea did not fall on deaf ears in the Senate finance committee. For the amendments by that committee, which became public property on Friday last, indicate that the protest of the automobile manufacturers will prove at least partially effective.

As reported by the House, the duty on all finished automobiles was 45 per cent., on chassis 30 per cent. and on parts 20 per cent., the present rate on all those goods being 45 per cent. In their protest, the manufacturers pointed out that practically no finished automobiles are imported and that as 20 per cent. on parts would stop the importation of chassis and permit parts to be brought over and assembled here, 20 per cent. would be the "real effective duty."

As a result of this argument, the Senate committee has not only advanced the rate on parts to 30 per cent., but has separated the duty on finished automobiles into two items, evidently with a view of affording a measure of protection to the higher priced American cars, the Senate provision fixing 45 per cent. as the rate for finished automobiles valued at $1,500 or over, and 30 per cent. for those valued at less than $1,-500. In the Democratic caucus, at which the amendments were considered, this latter provision did not meet with entire favor, and it may be changed before the bill is formally reported to the Senate itself. In

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the caucus, a demand arose that the tariff on cars listing at $1,000 should be reduced to 10 or 15 per cent.

The objections filed by chain manufacturers also proved of some effect, the Senate committee raising the rate on "sprocket and machine chains" to 25 per cent. The House lumped all chains at 20 per cent. On the other hand, nuts, bolts and washers and nut bolt blanks of all sorts were reduced by the Senate committee from 15 per cent. to 10 per cent., and spiral nut locks and lock washers from 35 to 25 per cent., while insulated wire cable was pared from 20 to 15 per cent.

Files and file blanks, rasps, etc., all of which the House placed at 25 per cent., were amended by the Senate committee so that that rate now applies only to such machine-cut products, while a separate rate of 35 per cent. has been added for "hand-cut files and files of precision."

Mica and manufactures of mica, listed in the House bill at 30 per cent. ad valorem, has been amended by the Senate committee to carry a rate of four cents per pound when manufactured and valued at not more than 15 cents per pound. When valued at more than 15 cents and not more than 75 cents per pound, the rate is 25 per cent., and when valued at more than 75 cents per pound 20 per cent. On all "built up mica and all manufactures of mica or of which mica is the component material of chief value," the rate fixed by the Senate is 30 per cent.

Leather, however, has been transferred to the free list by the Senate committee having the bill in charge.

Called a "Thief," Demands $25,000.

Because the New York representatives of the J. I. Case T. M. Co., of Racine, Wis., said "He is a thief and should be behind bars," so he charges, Benjamin M. Weil, a dealer in new and used cars in New York City, filed suits this week in the Supreme Court for New York county for $25,000 for defamation of character. Some time ago Weil and the Case agency are said to have transacted a used car deal and the statements are alleged to have been made at some time later.

What Weil charges is "the defendant by its agents, servants or employes combined with one Coleman and one Llewellyn to injure the plaintiff by defamation in that the said Coleman and Llewellyn and this defendant . . . acting in the course of defendant's business . . . in the presence of divers persons," made the previously quoted remark, and "repeated the aforesaid false and defamatory words to many persons in and about the automobile district of the city of New York," where Weil is known to many tradesmen.

A. O. SMITH, MILWAUKEE'S BIG PARTS PRODUCER, IS DEAD

Long in Ill Health, Death Came Almost Without Warning—Son Will Succeed Father as President of Company.

After an illness of several months, Arthur O. Smith, founder and president of the A. O. Smith Co., of Milwaukee, died at his home in that city on Friday last, 20th inst. Despite continued ill health, his condition did not take an alarming turn until the hour before he passed away; his death, therefore, proved a shock to his friends.

Mr. Smith was born in North Prairie, Wis., on February 23, 1859. As a young man he engaged in the contracting and construction business, and several large private and municipal structures in Chicago, Kansas City, Omaha, and other Western cities are monuments to his genius. In 1896 he returned to Wisconsin, going to Milwaukee, where, with his father, Charles J. Smith, and his two brothers, he established the C. J. Smith & Sons Co., manufacturing bicycle parts. The company was one of the largest producers of its kind in the world.

With the advent of the motor car, Mr. Smith transformed the business into a motor parts plant and became sole owner. The plant at Clinton and Reed streets was enlarged, but the success of the business made it entirely inadequate, and a new main plant therefore was erected at 27th and Hopkins streets, which is one of the largest industiral structures in America. The main building is 1,025 feet long and 480 feet wide and contains more acreage under one roof than any single shop building known. The old works on Clinton street are being devoted mainly to the manufacture of bicycles and motorcycle parts, and the main works to motor car parts and commercial cars.

About 18 months ago the Smith company began the production of a truck of its own, under the name of Smith-Milwaukee, but this department in no way affected the parts business.

L. Raymond Smith, who has been his father's right-hand man for six or seven years, will succeed him as head of the company and general manager of its business. About six months ago the Smith family purchased all outside holdings, and Mr. Smith's heirs are sole owners.

Allen, of Fostoria, Chooses Directors.

The Allen Motor Car Co., of Fostoria, Ohio, which recently was incorporated with an authorized capital of $500,000, has linked with the Peabody and Columbia Buggy companies of that city, by whose principals the Allen company was organized. The directors were elected last week, as follows: E. W. Allen, Grattan H. Baker, Geo. E. Schroth, Mahlon T. Thomas, Ross J. Christy, John E. Wright and W. O. Allen, all of whom are prominent in banking and business circles in Ohio. In turn, E. W. Allen was chosen president and W. O. Allen treasurer.

Stearns to Acquire More Real Estate.

For the purpose of controlling some 460 feet of Euclid avenue frontage adjoining the Stearns factory in Cleveland, the F. B. Stearns Co. has added $200,000 to its capital stock. The property is owned by several men heavily interested in the Stearns company and, at the time of its purchase, possession was vested in a realty company organized for that purpose. The increase in the Stearns business has made it advisable for the stockholders themselves to take over the property and, accordingly, an agreement has been reached whereby the transfer will be effected by an exchange of the realty company's securities for stock in the F. B. Stearns Co. under certain conditions, $47,000 of the new stock being issued for the purpose. The remainder will be retained in the treasury.

Prest-O-Lite Forms a New York Company.

With a capitalization of $800,000, the Prest-O-Lite Co. was incorporated this week in New York State with the stated object of manufacturing generators for acetylene gas, which is the business of the parent company in Indianapolis. The incorporators are Frank E. Sweet and Samuel M. Cooley, both of Speedway, Indianapolis's "horseless" suburb, and Clarence Winter, of New York City, of the firm of Winter & Winter, the Prest-O-Lite attorneys. The latter state, however, that it will be several days before the company's plans are sufficiently near consummation for them to disclose "what's what."

Missourians Turn to Kerosene Engine.

With the development of a kerosene burning engine in view, the Missouri Engine Co. has been formed in St. Louis by Adolph E. Winkelmeyer, Hugo and Chas. Lippert and Harry Bain. They will perform their kerosene burning experiments and do a general metal manufacturing business at 2810 North Eleventh street.

Strikers Start Garage of Their Own.

Members of the Auto Repair Machinists' Lodge of Boston, Mass., some of whose members are on strike, have, opened a "lodge garage" on St. Mary street to afford employment for men who are out. The garage is being run by a commission of five union men, headed by Joseph Guinazzo.

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BROKER SEEKING TO WRING MILLION FROM FAVARY TIRE

Result of Proposed Formation of $10,000,000 Corporation—Says he Unearthed Man with $2,500,000, Then got "Cold Shoulder."

When the Favary Tire & Cushion Co., whose principal is Ethelbert Favary and which is promoting a spring tire from an office in a New York skyscraper, conceived the idea of a $10,000,000 company to make and sell its product it did not anticipate the storm which loomed up this week when Frank A. Weed, a finance broker, filed suit in the Supreme Court for New York county for a round million dollars.

Favary holds 51 per cent. of the original company's stock and, according to Weed's complaint, he was engaged to hunt up a man who would advance $2,500,000 in real money in exchange for half of the stock in a new $10,000,000 corporation, the original Favary company to get the other half with the exception of 10 per cent. of the $10,000,000 stock, which was to go to Weed, provided he found the desired man. The agreement is claimed to have been made May 19 last and Weed claims it did not take him long to find the $2,500,000 man in the person of one Captain Edward Brinley, who was ready and willing to enter the deal on the terms stated.

Weed claims that not only did Brinley enter into the projected company but arranged with the original Favary corporation to exploit the Favary tire in Great Britain and France. Then, so Weed states, the Favary company repudiated its commission contract and declined to let him into the broker business on the 10 per cent. basis. He states that the Favary rights are of immense value and that the stock in the proposed company will be very valuable, wherefore he says he has been damaged to the extent of $1,000,000 and demands that

Lamp Maker Must Pay for Forged Checks.

The New York Coach & Auto Lamp Co., 2 West 53d street, New York City, is suing to interview a former bookkeeper named Robinson, whose actions while he was in the lamp company's employ caused judgment to be taken this week in the New York City Court against the lamp company and Patrick Keaveney, a liquor dealer, for whom Robinson cashed numerous checks at the Keaveney store at 780 10th avenue during a period of 18 months ending last June and of them nine were declared forgeries. Keaveney demanded that the lamp company make good on the bad paper, but the latter disclaimed liability and suit resulted. It was claimed that Harry Sutterman, president of the lamp company, had stated to Keaveney that it was all right to cash whatever checks Robinson presented. The verdict was for the full amount with interest.

Bumper Suit Must go to Trial.

Apparently neither side is to have a walkaway in the suit brought recently in the United States District Court for the Southern District of New York by Rollie B. Fageol and the Hartford Suspension Co. against E. R. C. Struthers with the object of restraining the latter from manufacturing concrete bumpers in his front parlor at 214 West 50th street, New York City, in alleged infringement of Fageol's design patent, No. 43,740, which is owned by the Hartford company. Recently the latter asked for a preliminary injunction, but this was denied by the court, and last week Struthers sought to have the case dismissed, but this, too, was denied, which leaves the merits of the patent to be threshed out in regular order.

Phoenix to Operate in Moose Jaw.

The Phoenix Mfg. Co., of Eau Claire, Wis., which has built gas engines and road and field tractors, has concluded negotiations for the establishment of a tractor factory in Moose Jaw, Can. That city has voted a bonus to induce the company to locate "in its midst."

Stutz Cars Cause Stutz Parts' Dissolution.

The Stutz Auto Parts Co., of Indianapolis, has been legally dissolved. The dissolution is chiefly a formality, as the company had ceased to be active as a producer of parts after its principals last year took up the manufacture of Stutz cars.

Warren's Valuation Placed at $282,000.

According to the receiver's inventory of the Warren Motor Car Co., of Detroit, which is to be disposed of at public auction today, the value of the assets as a going concern is $282,169.62. Its liabilities aggregate $375,000.

Peoria Man Made Midland's Receiver.

Edward McCullough, of Peoria, has been appointed receiver for the bankrupt Midland Motor Co., of East Moline, Ill. Whether he will be able to unravel the much-mixed affairs of the bankrupt is an open question.

Crow Adds 5,000 Feet of Space.

The Crow Motor Car Co. just has completed a brick addition to its plant in Elkhart, Ind. The structure, which adds 5,000 square feet of floor space, will be utilized as a machine-shop.

TRACTOR DIVIDEND OF 72% SHARES $105 AND GOING UP

Factory Isn't Built Yet But What of That?—Figures Can't Lie and Pioneer Company Is Some Statistician—What Project Is.

If anyone desires to obtain a quick glimpse of annual dividends of 72¼ per cent., the Pioneer Tractor Co., Ltd., which has opened an office in Detroit, will be pleased to unroll the picture. As the title of the company implies, this handsome return is to be earned in the production of agricultural tractors, the actual manufacture to be carried on in Calgary, Alberta, Can., where, it is stated, foundations for three buildings already have been laid.

The Pioneer Tractor Co., Ltd., itself is a Canadian corporation, capitalized at $2,000,000, and is an outgrowth of the Pioneer Tractor Mfg. Co., of Winona, Minn., under whose license it will operate. The president and general manager of the Canadian company is E. M. Wheelock. H. E. Blair is secretary and treasurer, and G. A. West is a director. Twelve other directors will be elected later. Blair and West are identified with the Winona enterprise which, according to the prospectus, "shows earnings of over 38 per cent. in its last annual statement."

Of the Canadian corporation's $1,500,000 preferred stock, $500,000 will be very kindly sold in the grain-growing provinces of Manitoba, Alberta and Saskatchewan, another $500,000 will be offered to all comers, residents of the United States particularly, and the remaining $500,000 will be retained in the treasury.

At the present moment, the $100 shares are being offered at 105 and all who do not "step up to the captain's office" in a hurry may have to pay an even greater premium, as it is stated that "the price will be advanced five points as each additional $100,000 is taken up." Despite the premium, however, the first subscribers to the stock in Detroit will receive free one share with each 10 shares subscribed for, and "installment subscriptions" will not be waved aside.

In some way, the promoters of the enterprise have obtained figures which apparently show that in the province of Saskatchewan alone there was but one gas tractor in 1906, whereas in 1911 the sum invested in such implements approximated a total of $6,655,000.

To make its offer still more attractive, that fact that Henry Ford is interested in and is building a farm tractor is remarked in large type, while in smaller letters the marvelous returns from original invest-

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ments in Bell Telephone, Western Union, Westinghouse and other big dividend payers are flashed on the screen; few prospectuses would be complete without them.

The Pioneer Tractor Co. does not actually promise 72¼ per cent. dividends; it merely gives a suggestion of them. The preferred stock really bears only 7 per cent. interest, but that 72¼ per cent. is not impossible is demonstrated to the satisfaction of the promoters by an array of figures which show that it is possible to manufacture and sell 1,000 tractors annually at a cost of $2,354,650, and as the tractors will sell for $3,800 each, the gross receipts naturally are $3,800,000, leaving an actual profit of $1,445,350. And there you are!

Daimler Import's Settlement Accepted.

The Bankruptcy court in New York City this week confirmed the composition proposed in the case of the Daimler Import Co., as described in Motor World of last week, 19th inst., whereby all the Daimler contracts, six in number, revert to the parent company; also, during the next four years the creditors will receive $75 for each car and 5 per cent. on all parts imported. Other available assets are $7,872 and the liabilities $67,261.

Since the petition in bankruptcy was filed last fall the Paul La Croix Auto Co., Inc., of New York City, has been handling the Daimler sales, but whether this company will acquire the importing license is as yet undecided. The General Vehicle Co., of Long Island City, which manufactured Mercedes trucks under a contract which was canceled, is at persent operating under a tentative agreement, but is likely to be given a regular license. The pleasure car manufacturing rights are as yet to be disposed of, and it is hinted that, anyway, the German Daimler would rather build its cars in Germany than have them made here, producing in the latter case only a semi-foreign product, which may indicate that in pleasure cars importing will be the major business.

Knox Trustee Named Despite Objections.

Overruling the objections of the stockholders' committee, the Federal Court in Boston has appointed Charles G. Gardner, of Springfield, trustee in bankruptcy for the Knox Automobile Co., of that city. As bankruptcy schedules which have been filed show an excess of assets of liabilities of about $400,000 for a considerable equity of the stockholders, the latter propose to continue their campaign for the appointment of three trustees instead of one.

The stockholders' committee is also intent on working out a reorganization plan, the majority of the company's stock having already been deposited with the Old Colony Trust Co., in Boston. As a part of the plan, the Knox company assigned, last September, to Edward O. Sutton and Harry G. Fisk, who, with Charles R. Lewis, were later made receivers. The biggest stockholder is the estate of Alfred N. Mayo, who died one year ago to-day. Sutton and Fisk are Mr. Mayo's sons-in-law.

U. S. Tire Files Financial Report.

In compliance with the laws of Massachusetts, in which it is doing business, the United States Tire Co., of New York, has filed with the secretary of State a statement of its financial condition as of May 28, 1913. The figures, as compared with the company's statement on March 1, 1912, are as follows:

Assets.

	May 28, 1913.	March 1, 1912.
Real estate	..	$41,782
Real estate and investment	$330,474	..
Machinery, fixtures, etc.	..	120,183
Material, stock in process and equipment	9,395,452	2,981,686
Cash and debts receivable	4,193,728	2,535,540
Total	$13,919,655	$5,679,193

Liabilities.

Capital stock	$500,000	$500,000
Accounts payable	12,925,511	5,148,785
Surplus reserve	494,143	30,408
Total	$13,919,655	$5,679,193

Walter Receiver Renders Final Report.

Having acted as receiver of the Walter Automobile Co., of Trenton, N. J., since May 14, 1909, Harry S. Wright last week submitted his report, and application has been made that he be discharged. The receivership was asked by John L. Kuser, a stockholder, and others, and later the business was taken over by the Mercer Automobile Co., of Trenton. Between the appointment of the receiver and the absorption by the Mercer the report shows that the receipts were $4,818.67 and the disbursements $2,664.30, leaving a balance of $2,-154.37. The Walter company entered the trade with great expectations, but was unable to steer its course clear of financial shoals.

New Rule Affects Shipments of Gas.

Amending the Federal regulations covering the shipment of dangerous articles by freight, the Interstate Commerce Commission, on Tuesday last, issued the following order affecting the carriage of "cylinders containing inflammable gases."

When they are not boxed or crated for shipment, the commission orders, the safety device and discharge valve must be made safe from injury during transit by a design and construction of the cylinder, or they must be protected by strong metal caps that cannot be detached by rolling the cylinder.

"Carload or less than carload lots loaded by the shipper to be unloaded by the consignee may be transported without crating or boxing, provided the cylinders are loaded compactly in an upright position and are securely braced to prevent any relative movement during transit, according to the general methods prescribed by B. E. pamphlet No. 6 for bracing shipments for explosives."

Stephenson Truck Factory Still Idle.

Although it was expected that after the settlement of the litigation between the Stephenson Motor Car Co., of South Milwaukee, and the J. I. Case T. M. Co., of Racine, Wis., the former plant would resume the production of trucks it still remains idle and its future appears problematical, George L. Stephenson, its president and general manager, having become a factory representative of the Speedwell Motor Car Co., of Dayton, Ohio.

The Stephenson company sued the Case interests for an alleged breach of contract, according to the terms of which the former was to be purchasesd and taken over by the latter provided certain conditions were fulfilled. When the case came to trial, however, the court decided against the Stephenson people.

Preparing for Munger-Rubber Goods Trial.

Because a later suit was filed, in 1912, against the Rubber Goods Mfg. Co. in the Supreme Court for New York county by William A. Evans, as trustee in bankruptcy of the long-deceased Munger Vehicle Tire Co., a former action, begun in 1908, was this week discontinued. The suit is brought to compel the Rubber Goods company, which fathered the Munger tire until it looked hopeless, to pay $33,124.25 as the balance of a stock subscription of $84,000. This amount is the Munger company's only asset.

Oil Company Sues Dealer-Garageman.

The Standard Oil Co. of New York filed suit this week in the Supreme Court for New York county against A. W. Blanchard, Inc., a garageman-dealer at 101 Liberty street, Brooklyn, N. Y. The claim is for $543.60 for goods supplied between November 1 and December 10, 1912.

Two More Additions to Kinsey Plant.

The Kinsey Mfg. Co. has let contracts for two additions to its plant in Toledo. The larger building will be a one-story wood warehouse, 150 x 200 feet, and the other a one-story brick workshop, 50 x 200 feet.

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The Week's Incorporations

Hart, Mich.—Hart Auto Co., under Michigan laws; authorized capital, $5,000.

Alma, Mich.—Alma Motor Truck Co., under Michigan laws; authorized capital, $5,000; to manufacture motor trucks.

Hackensack, N. J.—Undercliffe Taxi Co., under New Jersey laws; authorized capital, $2,000; to operate taxicabs and deal in motor car supplies.

Detroit, Mich.—Auto Sales Co., under Michigan laws; authorized capital, $5,000; to deal in motor cars. Corporators—F. A. Derval, F. H. Wolf.

Groton, Vt.—Groton Garage, under Vermont laws; to conduct a general motor vehicle business. Corporators — M. E. Beckley, D. G. Farrow.

Tulsa, Okla.—Tulsa Car Co., under Oklahoma laws; authorized capital, $100,000. Corporators—J. B. Levy, C. R. Perry, M. Dickerman, all of Tulsa.

Beaumont, Tex.—Orleans Motor Car Co., under Texas laws; authorized capital, $7,500. Corporators—C. L. Smith, J. K. Smith, S. F. McConnico and others.

Indianapolis, Ind.—College Avenue Garage, under Indiana laws; authorized capital, $2,000; to conduct a garage. Corporators—F. H. Rupert, M. Rupert, H. A. Davis.

Detroit, Mich.—Grant Motor Car Co., under Michigan laws; authorized capital, $5,000, to manufacture motor cars. Corporators—George D. Grant, David A. Shaw.

Carlyle, Ill.—Clinton County Auto Co., under Illinois laws; to buy and sell motor cars, machinery, etc. Corporators—A. W. Donnewald, H. J. C. Beckmeyer, H. V. Murray.

Los Angeles, Cal.—Auto Protection Co., under California laws; authorized capital, $50,000. Corporators—C. A. Short, S. F. Simoneau, W. B. Short, R. E. Hewes, F. C. Short.

Springfield, Ohio — Gramont Traction Plow Co., under Ohio laws; authorized capital, $500,000; to manufacture traction plows Corporators—P. E. Montanus and others.

Seattle, Wash.—Van Brunt Motor Car Co. under Washington laws; authorized capital, $75,000. Corporators—D. C. Van Brunt, Harry W. Doherty and others, all of Seattle.

Louisville, Ky.—Ten Broeck Tyre Co., under Delaware laws; authorized capital, $250,000. Corporators—S. S. Adams, Jr., J. G. Gray, M. B. F. Hawkins, all of Wilmington.

Portland, Me.—Standard Limousine Top Co., under Maine laws; authorized capital, $500,000; to manufacture and deal in limousine tops. Corporators—E. H. Thompson, C. F. Tenant.

Augusta, Me.—Motor Tour Co., under Maine laws; authorized capital, $50,000; to conduct tours and engage in a general motor vehicle business. Corporators — M. Brainerd, G. K. Bassett.

Chicago, Ill.—Foraker Motor Truck Co., under Illinois laws; authorized capital, $12,000; to conduct a general motor vehicle business. Corporators—E. W. Brooks, G. W. Andrews, P. A. Neufer.

East Dedham, Mass.—East Dedham Garage, under Massachusetts laws; authorized capital, $5,000; to conduct a garage. Corporators—Howard H. Bonnemort, Charles J. Bonnemort, Irene Bonnemort.

Cleveland, Wis.—Cleveland Auto & Supply Co., under Wisconsin laws; authorized capital, $5,000; to conduct a general motor vehicle business. Corporators—W. H. Toeple, A. B. Erdman, Albert Lutze.

Toledo, Ohio—Anderson Rolled Gear Co., under Ohio laws; authorized capital, $100,000; to make gear machines for motor cars, etc. Corporators—N. Anderson, Cleveland; Frederick A. Barker, Toledo.

Bridgeport, Conn.—Auto Machine Co., under Connecticut laws; to conduct a general motor vehicle repair business. Corporators—H. F. Mitchell, E. R. Green, W. A. Smith, F. J. Smith, all of Bridgeport.

Hoboken, N. J.—Excelsior Auto Garage, under New Jersey laws; authorized capital, $25,000; to manufacture vehicles of all kinds. Corporators—A. H. McMahon, C. B. Hermans, J. F. Marion, all of Jersey City.

Milwaukee, Wis.—B. & M. Mfg. Co., under Milwaukee laws; authorized capital, $10,000; to manufacture and market a spark plug intensifier. Corporators—Charles D. Brenner, John L. Mooney, William C. Lund.

Montclair, N. J.—Heyer Auto Supply Co., under New Jersey laws; authorized capital, $25,000; to conduct a general motor vehicle business. Corporators—G. D. Smith, A. P. Heyer, both of Montclair; J. Culvert, Verona.

West New Brighton, S. I.—G. E. Rall Co., under New York laws; authorized capital, $5,000; to operate a garage. Corporators—George E. Rall and Catherina E. Rall, both of Quinlan avenue; August Roizsch, Concord, S. I.

Massapequa, N. Y.—Massapequa Auto Supply Co., under New York laws; authorized capital, $5,000. Corporators—J. Sellman Lilly, Massapequa; Arthur B. LaFar and George R. Cooper, both of 80 Maiden Lane, New York City.

Youngstown, Ohio—Royal Taxicab Co., under Ohio laws; authorized capital, $25,000; to manufacture taxicabs and motor trucks. Corporators—Charles Gaither, H. A. Husted, T. J. Raftican, Dr. W. H. Buechner, I. M. Hartzell.

New York, N. Y.—Alhambra Auto Painting & Trimming Co., under New York laws; authorized capital, $1,050. Corporators — Adolph Horenstein, 152 Forsyth street; Max Marcus and Herman Marcus, both of 411 East 81st street.

New York, N. Y.—Keatch Patents Co., under New York laws; authorized capital, $100,000; to deal in pneumatic and rubber cushion tires. Corporators—George E. Starr, Harold A. Forbes and Charles H. Merchant, all of 34 Nassau street.

New York, N. Y.—Club Scrap Tire & Rubber Co., under New York laws; authorized capital, $2,500. Corporators—Harry Dolkart, 210 Henry street; Abraham Kabalkin, 318 East 13th street; William Adinoff, 69 East 111th street.

New York, N. Y.—Herlihy-Scales Co., under New York laws; authorized capital, $2,500; to deal in and let sightseeing automobiles. Corporators—Dalton Scales, Dallas, Tex.; Richard Herlihy, 23rd street and Broadway; Benjamin A. Judd, 25 Broad street.

Jersey City, N. J.—Prest-O-Ceal Co., under New Jersey laws; authorized capital, $100,000; to make tire fillers and conduct a general motor vehicle business. Corporators—W. B. Shelton, Brooklyn, N. Y.; W. R. Hill, New York City; W. H. Carey, Jersey City.

New York, N. Y.—Prest-O-Lite Co.,

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under New York laws; authorized capital, $800,000; to manufacture generators for acetylene gas, etc. Corporators—Clarence Winter, 55 Liberty street; Frank E. Sweet and Samuel M. Cooley, both of Speedway, Indianapolis, Ind.

Minor Business Troubles.

A receiver was appointed this week in the Federal court in Boston for the Rex Motor Co., which maintained a plant in East Boston. The company was recently petitioned into bankruptcy by creditors.

A petition in bankruptcy was filed this week in the Federal court in New York City against Auguste Delbruge, who conducted a tire repair-shop at 256 West 41st street. The petitioners and claims are: Michelin Tire Co., $1,276.70; Goodyear Tire & Rubber Co., $366.26; Swinehart Tire & Rubber Co., $918.23. It is charged that Delbruge permitted the landlord to obtain a judgment for rent and that Delbruge transferred and converted part of his property between June 1 and 20.

William H. Fuller, trading in Pawtucket, R. I., as the Pawtucket Auto Co., has filed a voluntary petition in bankruptcy. He owes $10,942.37 in unsecured claims, $1,529.42 on three notes and $513.93 for other things. He states that his assets are $2,206.99, of which $30 represents furniture, clothes and other exemptions. The principal creditors are the E. M. F. Automobile Co., of Boston; the E. R. Thomas Motor Car Co., of Buffalo, N. Y., and Leonard Hinchliffe, of Peace Dale, R. I.

On the application of Max Brenner, a painter, a receiver was appointed this week in the New York City Court for the Gildale Motor Corporation which was formed some time ago with a capitalization of $30,000 to represent the Kline car in New York City; the principals were Theodore P. Gilman and his sons, Theodore P., Jr., and Edward E. The company never attained prominence and the Kline representation is now in other hands. Brenner's claim is for but $425 and is for labor and material supplied between January 14th and 21st, 1913.

Changes of Capitalization.

Portland, Me.—Auto Supply Co., to $50,000.

Detroit, Mich.—Metal Products Co., from $300,000 to $500,000.

Akron, Ohio—Diamond Rubber Co., from $100,000 to $10,000.

Akron, Ohio—S. & M. Tire & Rubber Co., from $20,000 to $500,000.

Indianapolis, Ind.—Cole Motor Car Co., from $500,000 to $1,000,000.

Columbus, Ohio—Pharis Tire & Rubber Co., from $25,000 to $50,000.

PROMINENT MEN IN TRADE WHO ASSUME NEW DUTIES

Resignations and Promotions That Serve to Place Many Workers in New Places—Few Leave the Industry.

W. H. Flinn has been appointed advertising manager of the International Motor Co., of New York. He succeeds R. H. Hutchinson, Jr.

Frank E. Fisher, for the past two years manager of the Studebaker Corporation of Canada, has resigned that office. He has not made known his plans for the future.

George W. Edwards has been appointed manager of the St. Louis branch of the General Motors Truck Co. The branch, by the way, will be moved next week from 1115 Locust street to 2815 Olive street.

F. E. Edwards, of Chicago, chairman of the technical board of the American Automobile Association, has resigned that office. He did so because of the fact that he is about to engage in the automobile business in Chicago, where he will handle the Edwards-Knight car.

W. D. Edenburn, former manager of the Henderson Motor Car Co.'s newspaper department, has resigned that position to become identified with the Apperson Bros. publicity organization. He will represent the Appersons on the Indiana-Pacific tour which starts from Indianapolis on Tuesday next.

William A. Maynes, of Los Angeles, has been appointed sales manager of the Frank O. Renstrom Co., which controls the Regal and Kline cars on the Pacific Coast. Maynes will establish headquarters in San Francisco and direct the business in the States of Washington, Oregon, California and Nevada.

Following the removal of the Lansden Co. from Newark, N. J., to Allentown, Pa., M. E. Kern has been elected its vice-president and general manager. He succeeds Geo. E. Blakeslee, of Jersey City, who was temporarily filling those offices. Kern himself has long been identified with the Macks of Allentown, who are heavily interested in the Lansden property.

Owners' Clubroom in Bagnell Salesrooms.

A clubroom for car owners will be a part of the new home which the Bagnell Automobile Co., of St. Louis, Mo., is having erected at 1409-11 Locust street. These rooms will be located on the second floor, where a space 21 x 35 feet will be fitted up with upholstered mission furniture, photographs on the walls, books, Cole literature and other conveniences. It is the intention of the Bagnell company to endeavor to create among Cole owners the impression that they are a big brotherhood in which the company has a paternal interest.

Binghamton Company Building Garage.

The New York Sales Co., of Binghamton, N. Y., has completed a new garage, 52½ x 173 feet, extending through a city block from 34 State street to 33 Collier street. Doors at each entrance are 11 feet wide and the driveway between the doors is 20 feet wide. The building contains salesrooms, storage space for 40 cars and a repair and service department, and is equipped with modern machinery and devices. The company, which formerly was located at 25 Washington street, handles Cole, Hudson, Paige-Detroit and Little cars. The officers are: President, C. E. Titchener; secretary, N. A. Boyd; treasurer and manager, C. E. Sweet.

Recent Losses by Fire.

Nantasket, Mass.—Nantasket Garage, garage damaged. Loss, $1,500.

Allentown, Pa.—Berwin Auto Co., garage and contents destroyed. Loss, $25,000.

Rome, N. Y.—Grant Smith & Co. garage damaged by explosion. Loss not stated.

Des Moines, Iowa—Lagerquist Carriage Co., plant and 12 cars destroyed. Loss, $50,000.

Indianapolis, Ind.—Indianapoliis Motor Car Co., 419 East Market tsreet, building damaged. Loss, $2,000.

Hans Adds $25,000 Factory Building.

The Hans Motor Equipment Co., of La Crosse, Wis., has awarded contracts for a new new $25,000 factory building which it hopes to have completed and in shape to turn out the Hans strainers, gauges, filler caps, etc., by August 15th.

Polack Wants Expressmen to Pay up.

The Polack Tyre & Rubber Co. has filed suit in the Supreme Court for New York county against Michael Keller and Joseph W. Bergen, who operate the Rockaway and New York Auto Express Co. The claim is for $210 for tires.

Schacht Assets Near to Half-Million.

According to the inventory of the bankrupt Schacht Motor Car Co., of Cincinnati, its assets total $243,854.75, which includes $19,000 equity in a piece of real estate. The company's liabilities approximate $175,000.

Keeton Enlarging for Testing Work.

The Keeton Motor Co. has commenced work on an addition to its plant in Detroit. It will be a one-story structure, 100 x 60 feet, and will be used for testing purposes.

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In the RETAIL WORLD

C. J. Miller is about to open a garage in [illegible], Minn.

The Osseo (Wis.) Auto Co. is building a new garage.

The Central Garage has commenced operations in Bridgton, Me.

T. L. Murphy, of Colfax, Cal., has erected a garage on Grass Valley street.

The Belgrade (Mont.) Garage & Plumbing Co. is building a new garage.

Russ M. Cline, of Connellsville, Pa., has completed a new fireproof garage.

W. B. Gunton and Richard Dunbar have opened a garage in New Market, N. J.

F. Z. Curnutt is building a garage in Carlinville, Ill. He is a Studebaker dealer.

The Queen City Motor Co., of Beaumont, Tex., has secured plans for a new garage.

The General Repair & Machine Co. has opened a new garage in Connellsville, Pa.

Work has been commenced on a garage at Waxahachie, Tex., for W. B. Jackson & Co.

Louis Bamberger, of Freeport, Ill., has erected a garage. It is located on Adams street.

Northside Garage is the style of a new business in Pine Island, Minn. F. C. Arndt is manager.

William Roidt is about to erect a new livery garage in Portland, Ore. It will cost $1,000.

J. H. Hayes, of Memphis, Tenn., plans the erection of a new garage. The estimated cost is $3,000.

Percy McGee, of Plainfield, N. J., is having a new garage erected. The site is on Park street.

[illegible] & Jones, of San Francisco, are about to construct a garage. It will stand Hyde street.

Charles Heane, of Botsford, Conn., is about to open a garage in Hawleyville, in the same State.

The Metropolitan Garage & Machine-shop is the style of a new business in San Luis Obispo, Cal.

Pollard & Yokes have established a garage business in Erue, Pa. It is located at 26 French street.

E. B. Dalton, of Portland, Me., has purchased a site at 270 Brackett street and will erect a garage.

The Dealers' Auto Clearing House has opened up in Fresno, Cal. It is located at 1820 Merced street.

Edward Olhen plans to erect a new garage in Oakland, Cal. It will represent an expenditure of $4,500.

The Ruggles Motor Sales & Repair Co., of Lowell, Mass., is arranging for the erection of a new garage.

James Bros. have opened a garage in Tampa, Fla. They will erect a garage on Tyler street, to cost $21,000.

Edward M. Phillips, of Wilmington, Del., has been granted permission to construct a garage on Monroe street.

W. J. Crowell and T. Adams, of Charlotte, N. C., have secured authority to build a garage. It will cost $3,500.

Charles Breiner has opened a new automobile supply store in Middletown, N. Y. It is in the Barnett building.

Eugene Smith has entered the garage trade in Enosburg Falls, Vt. He succeeds to the business of L. D. Hart.

C. R. Parker, of the Parker Garage, 113 Harrison street, Davenport, Ia., has become a dealer; he has the Peerless line.

J. H. Ricksocker, formerly of Kansas City, Mo., is building a garage in Park Rapids, Minn. He will operate it.

Herbert Crandall, formerly of Westfield, N. Y., has purchased the Manton Garage, in Silver Creek, in the same State.

A company has been formed in Morton, Minn., to erect a fireproof garage, to cost $8,000. John Sagness is president.

H. R. Gerber, of Lester Prairie, Minn., plans to build a garage in New Germany, in the same State. He will operate it.

Permission has been granted to Richard P. Barry, of Boston, Mass., to erect a garage. The site is at 216 Highland street.

S. A. Collins & Co., of Omaha, Neb., have received permission to erect a garage on Cuming street. The cost will be $10,000.

U. G. Robinson, of Bridgeport, Conn., has secured permission to build a one-story garage. The estimated cost is $2,700.

Gay & Schubring, of Madison, Wis., are having a new garage erected at 7617 University avenue. The estimated cost is $12,000.

The Elastic Air Distributing Co. has been formed in Stroudsburg, Pa., to market a tire filler. E. P. Arbogast is president.

Harvey Whittaker and Jefferson Davis are about to open a garage in Pittsfield, Ill. They have leased a building on East Main street.

Alvin Fauth and Parke Grim have completed a two-story garage, 70 x 30 feet, in Red Lion, Pa. It is located on South Pine street.

Gilbert A. Wehr has entered the trade in Baltimore, Md. He has secured the Reo agency and is located at 128 West North avenue.

P. S. Shook has entered the trade in Grand Rapids, Mich., at 419 South Division avenue. He has the agency for Essenkay tire filler.

B. Knox and D. Thompson have formed a partnership in Maryville, Mo. They will operate a garage and repair-shop in the Holt building.

W. R. Chamberlain, of Wabasha, Minn., has broken ground for a new brick and concrete garage, 40 x 100 feet. The site is on Main street.

W. W. Vass, of Raleigh, N. C., plans the erection o fa new brick garage, 50 x 100 feet, on South Salisury street. He will handle Chalmers cars.

Plans have been prepared for a new garage, 40 x 60 feet, to be erected in Geneva, Wis., for Luthers & Shiron. It will stand near the village's hotel.

E. C. Bailey, of Grand Rapids, Mich., has leased the former Tower Garage, at 58 Commerce avenue. He has changed the name to Bailey Garage.

The Auto Service Co., of 337 F street, San Bernardino, Cal., has been taken over by C. W. Brahsear. The equipment will be improved and increased.

Charles H. Gillin, formerly of Bowling Green, Ky., has taken over the City Garage & Transfer Co., in Knoxville, Tenn. It is located on Pronce street.

J. A. Strimple, of Janesville, Wis., has purchased the Park Hotel Garage. He has another garage on East Milwaukee street and will operate both establishments.

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John F. Hoppe, of Arlington, N. Y., and Milton A. Perkins, of Poughkeepsie, N. Y., are about to build a garage in the former town. It will stand on the main street.

Charles E. Holmes, formerly of Nashville, Tenn., but more recently of Atlanta, Ga., has reentered the trade in Nashville. He will open a garage and deal in Cartercars.

William N. Beverle, of Phoenix, Ariz., has established a garage business on West 1st avenue. He has installed a complete machine-shop equipment, electrically operated.

M. B. Hooker has completed a new garage and livery stable in Charlevoix, Mich. The building, which is 100 x 50 feet, is located on Antrim street.

The Washington Cartercar Co., of Seattle, Wash., has completed a new building at 1515-17 Broadway. The salesrooms are 40 x 70 feet and the repair-shop and storage quarters 50 x 60 feet.

W. B. Paton, of Menatchee, Wash., has sold the Cascade Garage to T. M. Gibbons, formerly of Cashmere, in the same State. The new owner has changed the name to Ford Garage and will continue to handle the Ford line.

A garage is to be erected on the Niagara River, in Buffalo, N. Y., for the Amphibious Garage Co., which will cater to both motor cars and motor boats. The site is in what is known as the Jones tract and is between Ontario street and Riverside Park.

George W. Browne, president of George W. Browne Automobiles, Inc., of Milwaukee, Wis., is about to erect a three-story garage, salesrooms and repair-shop, 90 x 100 feet, at Broadway and Biddle streets. He has taken a 10-year lease on the site.

William Jackson and A. H. Pyle, formerly connected with the Schecher & Phiffer Garage in Horton, Kan., have branched out for themselves. They have opened a garage in the McNerney building, on Main street, and have secured several agencies.

A company to operate a garage and repair-shop has been formed in Wortham, Tex., and has erected a new building for its occupancy. The company consists of Roy Simmons, J. W. Lindley, Michael Wiedner, A. N. Weaver, Henry Meador and Dr. K. W. Sneed.

The Rawlins Automobile Co. has been incorporated in Muncie, Ind., to operate a garage and to sell cars. It is capitalized at $10,000 and comprises Harry Spickermon, Charles Rawlins, Frank B. Woodman and Robert Wild. The company's place of business is located on Mulberry street, between Howard and Seymour streets.

S. W. Kent Miller, formerly proprietor of the Central Garage in Hagerstown, Md., is about to reenter the trade, in Martins-

(Continued on page 36.)

WHO IS THE OWNER OF CARS IN STOREHOUSE FOR DEALER?

Omaha Assessors Increase Assessment 228 Per Cent. and Raise Fine Point —Dealer Says Cars Aren't His Until He Gets Them.

Just who is the owner of cars which are held in a storehouse at the call of a dealer is a question which, when decided, will throw considerable light on the assessment question in Omaha, Neb., and which, if carried out into its minute ramifications, might have a bearing on the resale question which has attained such prominence following the overthrow by the United States Supreme Court of the Sanatogen price-licensing system.

In Omaha the question has been brought up by the Guy L. Smith Auto Co., and that this company is "making a fuss" is not provocative of surprise when it is stated that the County Board of Equalization decided a few days ago to increase the Smith company's assessment value from $8,500 to $28,000, an increase of more than 228 per cent. The company declares it will contest the increase. The advance appears to have been made largely because of a quantity of automobiles which are in a storehouse and which are taken out one by one and sold by the Smith company.

The equalizers hold to the opinion that these are the property of the Smith company and should be assessed at their proper assessment value, while the Smith company declares that it does not have possession of the cars until it draws them from the warehouse. To decide the legality of the increased assessment someone will have to determine the legal ownership of the cars involved.

Should it be decided that the cars are not the property of the Smith company until it takes them out of the storehouse to sell them it might not be impossible to argue further that the cars are not sold at all, not even by the manufacturer, until they have been placed in the hands of a customer by the dealer. On this basis there might be grounds for a manufacturer holding the dealer, as a sort of intermediary, to a fixed retail price.

Dealer Claims Apperson Broke Contract.

On the grounds that a representative of the Apperson Brothers' Automobile Co., of Kokomo, Ind., sold cars in its territory, the New Berlin (Ohio) Motor Car Co. has filed suit in the Common Pleas Court in Canton, Ohio, wherein it asks $3,720 as balm for its wounded feelings; the suit was filed by William Schumacher, Charles B. Strassner and G. Frank Smith, the members of the company, who allege that they were given the Apperson agency for the Ohio counties of Holmes, Wayne, Stack and Tuscarawas, that they agreed not to sell any other car of a competing price and that the Apperson company agreed not to sell any cars within the territory named.

The New Berlin men charge that during the term of the contract the Apperson company caused two cars to be sold in Hartville, O., a town in the territory in question, and that the commission on these was, or would have been, $720. The additional $3,000 is tacked on as damages to the New Berlin company's business through the manufacturer's action.

Subdealer Claims Deposit Was "Merged."

Claiming that a merger of dealerships in Syracuse, N. Y., "merged" a $1,250 deposit it had put up as a subdealer, the New York Sales Co., of Binghamton, N. Y., has filed suit, through its manager, Charles E. Sweet, against the James Automobile Co. and C. Arthur Benjamin, Inc., of Syracuse, N. Y., and the Hudson Motor Car Co., of Detroit, Mich. The complaint alleges that two years ago the Binghamton company signed up as a Hudson subdealer under the James company and put up $1,250 deposit and that later Benjamin, who now is sales manager for the automobile division of the American Locomotive Co., absorbed the James company. After this combination it is claimed that the requests of the New York Sales Co. for Hudson cars were refused, as was the return of its deposit. The action is filed in the Supreme Court for Broome county.

General Motors Truck Sues a Dealer.

The General Motors Truck Co. of Michigan has entered suit in the Rhode Island Superior Court against the Shepard Co., of Providence, to recover $35,000. The litigation grows out of an agency contract whereby the Providence company agreed to purchase 14 trucks and pay therefor $28,434 on delivery. The plaintiff alleges that although the trucks were delivered but $7,000 had been paid. It therefore sues for the balance due and "incidentals."

Two Cars Saved from Fire Are Stolen.

During the excitement attendant upon a $1,500 fire in the Nantasket Garage, in Nantasket, Mass., at 10 o'clock Sunday night, 23d inst., two of 30 cars which were rolled to the street and to safety were stolen. One is an old seven-passenger Packard, upholstered in red leather, and is owned by Edward M. Curran, of 40 Linden street, Boston. The other, also a seven-passenger vehicle, belongs to William W. Pettis, of 17 Walnut street, Abington, Mass.

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A. B. SWETLAND, President and General Manager
F. V. CLARK, Business Manager.

EDITORIAL DEPARTMENT
R. G. BETTS, Managing Editor
S. P. McMINN HOWARD GREENE
R. W. SHERMAN

ADVERTISING DEPARTMENT
BROCK MATHEWSON, Manager
New York Office
1600 Broadway
HOWARD L. SPOHN LOUIS R. SMITH O. H. ADAMS

Western Office
1001 Ford Bldg., Detroit, Mich
W. H. TRIPP, Mgr.

Detroit
1001 Ford Bldg.
MAXTON R. DAVIES

Cleveland
610 Superior Ave. East
C. H. HANDERSON

Chicago
Room 510 Harvester Building
606 South Michigan Avenue
T. E. BULLION

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COUNTING CHICKENS BEFORE HATCHING.

It may be true, as asserted abroad, that the "cyclecar is killing the cheap American car boom" in Great Britain, but it will require more than the mere assertion to carry conviction; it is more likely that the wish is father to the thought. Certainly, American export statistics do not bear out the statement, and unless Britishers, and Europeans generally, have lost their regard for comfort, and what may be termed the eternal fitness of things, it is difficult to believe that the cyclecar movement will attain more permanence abroad than it is likely to attain here.

Most of the so-called cyclecars produced abroad utilize either one-cylinder or two-cylinder engines, and where they are not driven by belts, and are not of toothpick construction they are so diminutive as to appear toylike. The cornucopias in the British blood must have lost some of their richness if it is possible that the subjects of King George will purchase such vehicles when they can obtain, for the same money or less of it, a "man's size" motor car, equipped with four-cylinder engine and otherwise affording more roadworthiness and comfort than can be obtained from the half-baked creations styled cyclecars.

Indeed, it does not seem probable that in any enlightened part of the world anyone will long make use of a one- or two-cylinder engine for a four-wheeled vehicle when a four-cylinder car is available at anywhere near the same price. However, if it really be true that the "cyclecar is killing the cheap American car boom" in Great Britain, then Great Britain is reckoning without the American cyclecar which is but just making its appearance. For the American article is a four-cylinder vehicle propelled by something more positive than a belt, and it will be sold at a price that, apparently, British manufacturers are unable to meet.

WHY NOT EMPLOY THE NEW TERMS?

Changing the language of an industry is not an easy matter, but that standardization of technical terms is highly desirable there is no room for doubt. For this reason, the effort of the Society of Automobile Engineers to bring about such a state of affairs merits more attention and consideration than has been given to it.

The report of the Society's nomenclature committee shows how much study has been devoted to the subject, and though its recommendations have not been formally adopted it seems impossible that their adoption will not come to pass. Meanwhile, a change of trade language can be assisted and the good work otherwise speeded if manufacturers, in compiling their catalogs and in issuing other printed matter, will make use of the terms which the committee has recommended for general adoption, after consideration of both foreign and American practise.

"Internal combustion motor" is such an inconvenient mouthful that "explosion motor" should readily find its way into use. "Gearing" is certainly as simple as "gearset" or "gears," while there is no doubt that "equalizing gear" and "differential gear" are as easy to employ as "balance gear," "compensating gear" or "differential." Also there is no reason why the recommended term "underpan" or "underguard" should not replace the very many other descriptives of that device. It may not be so easy to replace "fender" by "wheel guard," or "guard wing," but even that replacement is largely a matter of common usage.

SPORTING SUGGESTION SHOULD BE SNUFFED.

One of those good natured press agents who writes cheerful interviews with himself and puts the words in the mouths of prominent personages in the trade has caused one of them to assert that "motoring is the greatest American sport, regardless of what people may say about baseball."

Of course, the press agent meant well, and perhaps the man who is made to stand sponsor for the interview believes all he was made to say, but whatever the case, the definition of motoring as a sport and its comparison with baseball is not particularly happy.

Very many persons object very strenuously to being associated with anything of a sporting character, and in consequence are not likely to appreciate the efforts of even a cheerful press agent to supply "light reading" when it lends to anything they may use a sporting suggestion.

Motoring is a most delightful diversion—perhaps the most delightful one—but a sport or a game, never! The suggestion that it is in that category should be snuffed early.

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TIMKEN DECRIES SALE OF TRUCKS ON INSTALLMENTS

Axle Maker's House Organ Says Few Manufacturers Can Afford to be Bankers, Too—Unusual Capital and Standard Product Needed.

One of the big problems that motor car manufacturers are facing to-day is whether or not it is good business policy to sell pleasure and commercial cars on the installment plan, says the Timken Magazien.

Conservative, well established firms say no, emphatically no, and they base their decision on the fact that there isn't one concern in a thousand that has capital enough to engage in the manufacturing and banking business at the same time.

In spite of this, several large makers of trucks are selling their product on the installment plan, accepting as low as 15 per cent. down and extending the balance due over a period of 12 or 18 months.

Looking at this problem from the standpoint of a concern that has watched the progress of the motor car industry for the past 10 years, the small cash deposit and deferred payment plan has put a good many firms out of business.

The only kind of a corporation that can hope to make a success of the installment business is one that makes an article in an old established line. One in which development and quick changes have ceased—where the cost of production, handling and marketing have become fixed elements.

The company that does a deferred payment business must have behind it an enormous cash capital and almost unlimited resources, otherwise the business will quickly flounder on the financial rocks.

Any person who doubts this should take a list of at least twenty companies and compare the amount of actual paid-in capital with the volume of business they do. Do the same with other businesses and you'll find that the motor-car industry is undercapitalized.

In the face of such evidence, on what grounds can any concern justify the adoption of a deferred payment policy if it already lacks the necessary capital to make and market its goods?

Who is responsible for the demand that trucks be sold on a basis of 15 per cent. down and the balance in 12 or 18 months? The indictment rests solely upon the shoulders of certain irresponsible truck builders who found they could not move their product in the face of competition, either because it wasn't as good a truck or because it cost them so much to make that the only way in which they could hope to make sales was by offering the additional inducement of deferred payments.

A "make good" truck cannot be built around a selling price. It takes a certain number of dollars and cents' worth of the right material and the right labor to make a truck that will stand up under all conditions, 365 days in the year, with a minimum of upkeep. The concern that makes such a product is entitled to, and can get, a profit that will enable it to stay in business. But the manufacturer who thinks he can build quality trucks and wait 18 months for his money won't be in business long. He can't afford to run a manufacturing and banking business at the same time.

Sit in the grandstand for a while and watch the procession of manufacturers, of both pleasure and commercial cars, go by. You'll find that the concern doing business on deferred payments rarely passes the reviewing stand more than once.

Red Tail Lamps Tabooed in Vermont.

If the example set by the State of Vermont is followed by other States, the familiar red disk in tail lamps soon will become a thing of the past. Vermont has legislated it off the roads and thereby established a precedent. The red disk, it appears, has been the cause of much annoyance to locomotive drivers, and particularly to the drivers of the Boston and Montreal express, which runs on tracks that parallel in several instances public highways much travelled by motorists. In a number of cases, it is said, the locomotive drivers have jammed on their brakes and jerked their trains to a halt at what they supposed to be a danger signal but which on investigation turned out to be nothing more than the tail lamp of an automobile. Hence, complaints were made to road commissioners in several New England States and, as a result, Vermont already has acted and the others are likely to go and do likewise.

Firestone Makes Factory Workers Guests.

Departing from the usual custom of making managers, salesmen and other headquarters' attaches the chief figures of a "joyfest," President H. S. Firestone of the Firestone Tire & Rubber Co., of Akron, Ohio, provided a diversion one day last week by making the factory superintendents, foremen and other actual producers and their wives the guests of an automobile ride to the century-old Firestone homestead, 75 miles from Akron, where a dinner was served in the open air beneath the trees. After the "feed" and speeches by Firestone and others, the party returned overland by moonlight. Among the guests and one of the speakers was District Attorney Charles L. Whitman of New York county, a boyhood friend of Firestone.



*Indicates Sanction by A. A. A.

June 28, Milwaukee, Wis. — Milwaukee Automobile Club vs. Milwaukee Athletic Club reliability tour.

July 1, Indianapolis, Ind.—Start of the Indiana Automobile Manufacturers' Association's cross continental tour to Los Angeles, Cal.

July 4, Brooklyn, N. Y.—Long Island Automobile Club's secret time, secret mileage run.

July 4, Washington, D. C.—National Capital Motorcycle Club's track racemeet.

July 4, Taylor, Tex.—Track races under the auspices of the Taylor Automobile Club.

July 4, Columbus, Ohio—Columbus Automobile Club's 200-mile track race.

July 4, Los Angeles, Cal.—Start of Western Automobile Association's road race to San Francisco.

July 4-5, Sioux City, Ia.—Sioux City Automobile Club's track races on Speedway.*

July 4-6, Tacoma, Wash.—Road races under the auspices of the Montamara Festo Automobile committee.

July 11, Minneapolis, Minn.—Start of the American Automobile Association's national reliability tour.

July 18-19, Peoria, Ill.—Automobile Club of Peoria's track racemeet.

July 20, Seattle, Wash.—Track racemeet under auspices of E. A. Moross.

July 27, Grand Rapids, Mich.—Grand Rapids Automobile Club's reliability tour.

July 28-29-30, Galveston, Tex.—Galveston Auto Club's beach racemeet.

August 12, Kansas City, Mo. — Kansas State Automobile Association's reliability tour.

August 29-30, Chicago, Ill.—Elgin Road Race Association's road races.

August 30-September 6, Chicago, Ill.—Reliability tour of the Chicago Motor Club.

September 1, Columbus, Ohio — Second annual 200-mile track race of the Columbus Automobile Club.

October 4-11, Chicago, Ill.—Chicago Motor Club's Around Lake Michigan reliability tour.

November 24, Savannah, Ga.—Vanderbilt Cup road race under auspices of the Savannah Automobile Club.*

November 27, Savannah, Ga. — Grand Prize road race under the auspices of the Savannah Automobile Club.*

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MERRY SEVEN-WEEK STRIKE WAR ENDED BY INJUNCTION

New York Lamp Makers Deprived by Court of Pleasure of "Beating up Scabs"—Stutman Tells the Story of His "Tough Luck."

Ending a strike by injunction may not be the newest thing in the industrial world, but it probably never worked better than it did in New York last week, when the strikers in five lamp and radiator repair shops and garages laid down their arms—but didn't go back to work; at least, but a small portion of them went back and, as a result, there are a half hundred very disgruntled workmen in New York this week.

The strike extended through seven long, hard weeks and feeling was warm, so warm, in fact, that there were numerous physical encounters and the employers spent a not small sum for guards to watch their property and protect those men who did work and for taxicabs to get the men to and from the shops. So far as number of men and money invested in plants is concerned, it cannot be called a minor strike, but for those who took part it was far from a minor affair.

It began April 30, when the members of Local Union No. 137 of the Amalgamated Sheet Metal Workers' International Alliance walked out. From then on things were lively. According to affidavits which were presented in an injunction action brought in the Supreme Court for New York county by the Hudson Auto Lamp Works, Inc., of Broadway and West 51st street, pickets were stationed outside the shops, the men were harassed as they entered and left, and many "black" eyes were distributed as souvenirs of the industrial skirmish. Some of the exciting instances came at quitting time, for it was the custom to get the departing workmen into taxicabs and rush them to some elevated or subway station; often the strikers set out in pursuit in other taxicabs and then it was a battle of chauffeurs to see whether the men got safely to their homes. In one instance which is cited it was a mere block in traffic which held up a taxicab long enough for the pursued to make a getaway."

The shops affected were those of the Hudson works, the American Lamp Works, 243 West 47th street; the Columbia Lamp Co., 243 West 47th street; the New York Coach & Auto Lamp Co., 302 West 51st street, and the Superior Lamp Mfg. Co., 2422 1st avenue. The men were getting from $21 to $23 a week and demanded a closed shop and other union conditions. Last week the Hudson works decided that having its workmen beaten up and harassed was not only monotonous but expensive, so it secured an injunction against the local union and Samuel Ballinger, Harry Broadsky, Joseph Chatkind, William Finkelstein, Edward Hayman, Jacob Kline, Samuel Lechter, Harry Schwartz, Joseph Stutman, William Victorowich, Edward Valinsky, Jacob Walterman, Samuel Zalsberg and Harry Strauss, the first names being fictitious. Forbidden by law to picket as they had picketed, the strikers quit.

There was an element of pathos in the case of "Joseph" Stutman, a striker, for he was so sick he "couldn't beat up the scabs." Accordingly to the affidavit of a "scab," Stutman, shortly after the strike started, met this man on the street and said, "Whoever goes to work in any of the striking shops is going to get licked. We're going to fight them; we'll fix them, all right. Last year I was strong and could break a man and could lick 'scabs,' but this year I am sick and will have to leave it to others to lick the 'scabs'; we ain't going to let any men go up to work in the shops."

Outside of the fact that it really is rather tough on "Stut" not to have been in good physical condition and to have been obliged to leave it to others to "lick the scabs," the strike is past history.

Zuccarrelli Killed in Grand Prix Practice.

According to cable despatches, Paul Zuccarrelli, the Italian racing driver who drove one of the three Peugeot cars in the 500-mile race on the Indianapolis Speedway on Decoration Day, was killed at Evreux, France, on Thursday last, 19th inst., while practicing for the Automobile Club of France's Grand Prix race; Fanelli, his mechanician, also was killed. At the time of the accident, Zuccarrelli is said to have been travelling at nearly 113 miles an hour over a supposedly clear road. A peasant's cart emerged suddenly from a side road and Zuccarrelli's car struck it full force, swerved and turned over, pinning both driver and mechanician beneath it. Strangely enough, the peasant was unhurt beyond a few bruises, though those who witnessed the accident were so enraged at him that they soundly thrashed him then and there. Zuccarrelli's most recent victory was in the Grand Prix race for light cars held at Le-mans in September, 1912.

Wires Should Be Separately Fastened.

When electric wiring of any sort comes loose, two strands never should be held in place under the same fastener, for if they are there is danger that vibration will chafe the insulation and cause a short circuit. The better way is to use separate fasteners for each.

GERMAN TRIES TO "PUT ONE OVER" ON WILLYS-OVERLAND

Under Unrecognized Name Seeks to Buy 1,000 Chassis to Be Fitted With German Bodies—Part of Anti-American Campaign.

German rivalry and German prejudice sometimes take queer turns. When the competition of the American bicycle became keen, some of the German manufacturers and dealers resorted to almost unbelievable methods to stem the tide. They endeavored to boycott even the papers which carried American advertising and themselves printed ads of a violent nature in the effort to poison the German mind against the American "invader."

During the last year or so the American motor car has been made the target for similar practices, but the most sensational development in the line of meeting or crippling American competition has just come to light in the form of an effort of a prominent German manufacturer to purchase 1,000 Overland chassis with a view of equipping them with German bodies and selling them under his own name.

When the request for quotations was received by the Willys-Overland Co., as the name of the German was not recognized, the communication was ignored and little more was thought of it until the recent arrival in this country of Kurt Isserstedt, the Overland distributer in Germany. When he reached Toledo the letter was shown to him and he instantly identified the signature as that of one of the largest automobile manufacturers in Germany, although the latter had concealed his tracks by using a false name. He also is a man whose attacks on American automobiles have been particularly vicious, and, while it is assumed that it was his intention to turn American contsruction to his advantage, in view of the violent campaign which he has conducted, whether he had in mind baser skulduggery than that to which he has resorted is an open question. At any rate, he won't get the chassis at any price.

Crossing Continent in a Closed Car.

When J. W. Carton, who is driving a Studebaker "35" Sedan from Los Angeles to New York City, reaches the Metropolis, he will be the first man to have made the transcontinental trip in a closed car and he will be the holder of a record of a new kind. Carton and his car, which with passengers and baggage on board weighs 4,400 pounds, have reached Kansas City, Mo., after having traversed the worst of the roads likely to be encountered on the trip.

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AVOIDING MISUNDERSTANDING

Why Details Should Be Explained to Buyer Before He Is Asked to Pay for Things He Didn't Expect—Ford Salesman's Experience.

Once a month the sales men and department heads of the Detroit branch of the Ford Motor Co., of which W. A. Ryan is manager, hold a get-together meeting. The object of the meetings are education, inspiration and a cultivation of that quality known as "esprit du corps." Sales and technical problems are discussed and the meetings have proved of substantial value in throwing the light of experience on the pathway of young salesmen.

"A striking illustration of the value of having details thoroughly understood occurred recently," said Manager Ryan. "All the cars delivered from this branch go out with full ten gallons of gasolene in the tank and with an extra gallon of oil. For this we make a charge of $2.50, so that the price of a Ford touring car thus made ready for the road is exactly $602.50. One of our men made a sale a few days ago to a man and he drove the car downtown with the purchaser, his wife and family in order to get a check at the man's office. 'How much did you say the car was?' queried the purchaser, filling in the check. 'Six hundred and two fifty,' was the answer. 'What's the two fifty for?' asked the customer. The salesman explained that the charge was the regular charge for ten gallons of gasolene and a gallon of oil.

Illustrations Proved Unavailing.

"The customer argued that he ought not to be asked to pay for it. The salesman said the charge was perfectly legitimate—told him that if he bought a stove he would not expect to have it filled with coal and otherwise brought home to the man that when he bought a car, gasolene and oil did not go with it. The man grew irate and said he wouldn't pay a cent more than $600.

"'Here, you can take the cost of the gasolene out of your commission—that will settle it—for I will never pay it,' said the customer.

"'Why should I pay for it?' asked the salesman; 'besides, I don't work on commission; I work on salary. If you don't want the gas and oil let's drive back to the garage and take it out.'

"The suggestion did not make a hit.

Canceled Sale at Payment Point.

"'Get out of the car!' commanded the man to his wife. 'But I am not dressed to get out downtown,' she protested. 'Never mind, get out of the car!' said the husband, who had now persuaded himsef that he was fighting for a principle that must be maintained at any cost.

"The salesman diplomatically offered to drive Mrs. Purchaser home, which offer was accepted. We sent a different man down the following day to see the man and he ran right into the salesman for another car, who was just departing after having taken the order.

"True, this buyer was an unusual type, but it brought home the fact that the salesman should make every detail clearly understood early in the deal."

BLACKBOARD THAT PROMOTES EFFICIENCY IN REPAIR-SHOPS

A shop blackboard used by the Foster Motor Sales Co., Detroit, which sells Stevens-Duryea automobiles, has proved a great help in maintaining the efficiency of the repair department. It hangs to the left of the garage foreman's desk, which is placed just outside the repair department and in the garage proper.

On this blackboard is a complete list of repair jobs in the shop, including job-ticket number, name of car owner, and a condensed statement of the work required. Telephone calls regarding repair jobs are referred to the garage-foreman and a look at the blackboard gives him the job number and the details, so that he can take the matter up instantly with the repair department and give a quick reply to the inquirer.

Each morning the list is brought up to date. It helps the foreman to follow up work, gives a quick reference, saves time that used to be lost looking for papers that were liable to be misplaced and in a sense is an adaptation of Hugh Chalmers's idea of listing the "ten important things." Needless to say, a job cannot remain long undone in this shop; the blackboard reminder is too potent to allow any "sleeping."

KEEPING ADVERTISING LITERATURE IN PRESENTABLE SHAPE.

Advertising literature, such as booklets, pamphlets, etc., makes its best impression when it reaches the prospect spotlessly clean. With this thought in mind, a mid-Western dealer who sells Hupmobiles takes great pains to keep all advertising matter free from dust and dirt.

An adequate supply of booklets and folders always appears on the table in the showroom, and these are kept neatly arranged in piles so that a salesman can place his hand on exactly what he desires without wasting a second. But there is a reserve stock neatly indexed and kept in drawers from which is drawn the literature used for mailing. Not a piece of printed matter goes out of this dealer's place unless it is "fresh as a daisy."

Those dealers who have been in the habit of dumping their entire supply of advertising matter on a showroom table and permitting it to stay there to get flyspecked and dusty or musty will find it profitable to draw a hint from the experience of this very successful dealer.

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HANDLING "TOUGH" PROSPECTS

Dealer Who Holds That Struggling With Man Hard to Sell Is Wasted Time—Believes He Should Be Left to Worry Competitors.

"How much time should I devote to the ... prospect?" is a question which has ...led more than one dealer, and many ... been unable to decide whether to act ... the plan that a prospect never should ... given up or to operate under the theory ... time should be spent where it will pro... sales; a Michigan dealer who has been ... than ordinarily successful in his own ... establishment and in building up an ... ent sub-dealer organization has a plan ... own and his success adds weight to ... ression of this situation. His theory is ... in that he believes in making the ... prospect an asset instead of a lia... and how he does it is best exempli... one of his own illustrations.

Hears "Bill Smith Hasn't Closed."

"Let us suppose," he says, "that my man ... goes to Algonac, registers at the ... eats, chats with the proprietor and ... generally with the hotel people. In ... rse of his conversation it develops ... Robinson is selling automobiles, and ... man confides that Bill Smith is ... to buy a car and hasn't closed yet ... of the dealers.

... soon drops in at the drug store, ... gar, strikes up a conversation with ... k and lets this center of gossip know ... selling cars. The clerk 'tips' Robin... the fact that Bill Smith is going to ... car but hasn't 'closed' yet. When ... n reaches the local agency he is told ... that Bill Smith is going to buy a car ... n't closed yet.'

... ately Robinson takes the dealer ... and advises him not to spend any ... time on Bill Smith. 'Don't try to sell him,' says Robinson. 'He is one of your assets. Let him alone. He will draw all your competition, they will all waste their time and money trying to sell Bill Smith. Maybe they will spend a day or two at it, but they won't sell him; and by the time they get through with Bill Smith they won't have time to worry about the real easy ones.

"If Bill Smith has not bought he either wants wholesale prices, a better and more comprehensive guarantee than anybody wants to give, or he hasn't got the money. Why bother with him? Let the other fellows have him if they can get him."

BENEFITS OF SEPARATING GARAGE FROM REPAIR-SHOP

Keeping the repair-shop separate from the garage or salesroom is an idea that is growing in favor, as was pointed out in the Wide-Awake Merchandising Department of May 29, and in illustration of the reason why was cited the experience of a dealer in Jackson, Mich., who enumerated the advantages derived from this plan. He said it permitted the men to devote their time to individual jobs without being called away for the numerous little things that bob up about a garage or salesroom and also kept disassembled cars in the repair process out of sight of car owners.

Separation Gives Mechanics Leeway.

But that there is a slightly different angle to the question and an added advantage in that it permits the mechanics to do their work without the interference of men who are not skilled mechanically is asserted by G. F. Bischoff, of Rochester, Pa., whose letterhead bears the words "Automobile Mechanic."

"Motor World's mention of the subject recalls an incident of about two and one-half years ago," writes Bischoff, "when I was working in a garage in Altoona. The firm had an Oldsmobile, seven-passenger car, that had a rattle in the back end which the boss demonstrated to me over a rough piece of road and then told me to fix up the brakes. 'That's where the trouble is,' the manager said. I looked at the brakes, but disagreed with him; then looked at the manager's positive manner and came to the conclusion 'that's where the rattle was'—against my own judgment.

"Well, I spent more than half a day rigging up four springs to keep the brakes away from the drums and from rattling. Then we tried her out—same thing as before, and the manager exclaimed to me, 'That didn't fix it!' The next step was to turn the car over to me to hunt it out and fix it, which I proceeded to do by taking the car back in the shop and taking up the lost motion in the spring seats on the axles. That is the trouble I encountered in several shops—someone in authority, or the owner, making suggestions when, if left to themselves, the repairmen quickly would locate the real trouble."

WHAT MAY HAPPEN WHEN BILLS ARE NOT RENDERED PROMPTLY

The value of getting cash for repair jobs or, at least, rendering bills immediately on delivery of a job, cannot be too strongly emphasized.

A Cincinnati dealer did some repair work on a car in December and for some reason or other the bill was not rendered till March. Instead of instantly paying it and appreciating the time gratuitously granted, the customer brought in his car with a kick about some trouble that had developed later. And the dealer had to remedy it—without charge—before the customer paid the bill.

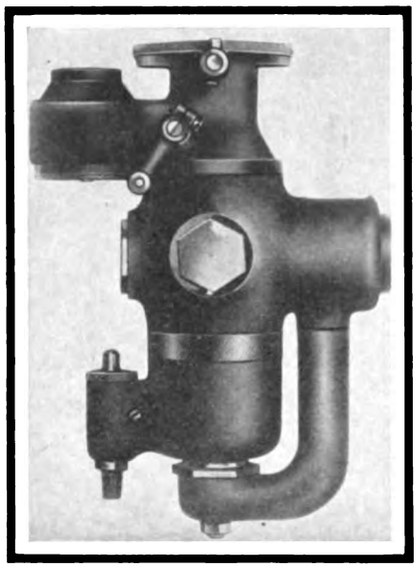
The labor cost was equal to 25 per cent. of the bill and the dealer, while conceding the point, felt morally sure that the new trouble must have developed some time after the car had been delivered. His bills now follow the job within 24 hours.

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KEROSENE SPRAY HEATED IN HARROUN CARBURETTER

Fuel Nozzle Opening Automatically Controlled by Auxiliary Air Valve —Main Air Hot, Extra is Cold —Only One Adjustment.

Of kerosene carburetters there is one that has attracted more attention than kerosene carburetters usually do—the Harroun device, made by the Ray Harroun Co., of Indianapolis, Ind., which has shown excellent results in extended tests and already has been offered as an option by the makers of the Henderson car. For several reasons, however, Harroun himself has been loath to have his carburetter illustrated, but finally has permitted photographs to become available, and while many of the details as to its construction are not given out, owing to pending patent matters, enough is known of it to give a good idea of the working of the apparatus.



HARROUN'S KEROSENE CARBURETTER

Exhaust heat is employed to vaporize the kerosene, as is usual in kerosene carburetters; the heat is applied to the kerosene after it has been partially atomized and mixed with a small quantity of air. It may be said, however, that the entire charge of gas is not heated to any great extent, for the rich gas is greatly diluted with cold air from the auxiliary air intake, which brings the temperature down considerably. The fuel in the float chamber is not heated. The flow of fuel from the spray nozzle is regulated, according to the demands of the motor, by the opening of the auxiliary air valve, there being a connection between the two. Only one adjustment is provided, and this may be operated from the dashboard without the necessity for the driver leaving his seat.

In the vertical type carburetter shown in the illustration the outlet to the intake manifold is at the top. At the bottom is he float chamber with the main air inlet passing through it; the air for this is heated by being taken in around the exhaust gas passage, which is on the right side, about half-way up the carburetter. The gas passes into the carburetter and surrounds and heats the venturi chamber, after which it is discharged in any convenient way. While the main air intake is heated, the extra air, as already has been stated, is admitted cold; the extra air valve is shown at the top of the carburetter on the left.

It is necessary to start on gasolene or on acetylene by a priming system; but once started, it is claimed that a motor fitted with the Harroun carburetter will do anything that it will do with a conventional gasolene carburetter. The mileage, however, is said to be about 10 per cent. higher than with gasolene, and to this saving, of course, must be added the much lower initial cost of the fuel. Gasolene, kerosene and the various motor spirits, or mixtures of these fuels, are said to be handled with equal facility by the Harroun carburetter. In changing from one fuel to another, no adjustment is required beyond that which can be made from the dash.

The interesting fact is brought out by the Harroun people that if the compression of the motor is very high it should be reduced to obtain the best result from kerosene, the proper pressure being about 60 pounds. They also state that L-head motors can be more successfully equipped for kerosene fuel than can T-head motors. Cylinder lubrication should be cut down one-half, as that much less oil is needed when kerosene is the fuel.

Polishing Both Points at Same Time.

A strip of thin steel, such as a piece of a hacksaw blade, with a piece of fine emery cloth glued to each side makes an excellent double-faced tool for dressing the faces of platinum contact points. It will smooth up both faces at the same time and, if the work is carefully done, leave them parallel, which is a matter of n olittle importance if long life is to be considered and freedom from burning expected.

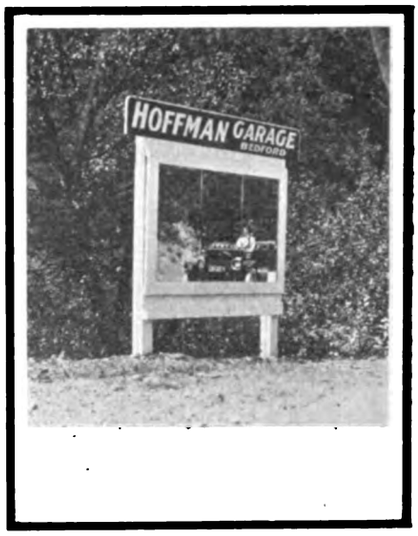
Weights of Gasolene and Water.

There is considerable difference between the actual weight of gasolene and water. The average gasolene now sold weighs a shade under 6 pounds per gallon, while water weighs 8.32 pounds per gallon. Kerosene comes in between with 6.6 pounds per gallon.

ROADSIDE MIRROR AS MEANS OF BRINGING GARAGE TRADE

Wide-Awake Pennsylvanian Combines Public Service with Garage Advertising—Unusual Method of Pleasing Motorists.

Bedford, which is down in the southwestern part of Pennsylvania, may not have more than 2,200 population, but it has a very enterprising and wide-awake garageman in the person of Lee F. Hoffman, proprietor of the Hoffman Garage. Evidence of it is contained or reflected in a looking-glass that is located near Bedford. The device, which has proven efficacious abroad, is a "danger turn" mirror and is erected at a sharp and obscured curve in the road west of Bedford at what is known as the "Narrows."



HOFFMAN'S TWO-PURPOSE MIRROR

Hoffman has so placed a 4 x 6-foot mirror that drivers coming from either side of the turn can see the reflection of the road and any vehicles that may be coming from around the corner; this makes it unnecessary for a driver to creep around the turn for fear he will collide with another car, and is an ecective preventive of accidents which otherwise might be avoided only with difficulty.

But—Hoffman operated from more than a philanthropic motive when he erected the mirror, for whoever looks at it must needs see the name "Hoffman Garage" across the top, and if the gratitude of the motorist is properly expressed many dollars from the transient trade should flow into the Hoffman till. Anyhow, it is one of the surest indications to the tourist that the owner of the Hoffman Garage is very much alive both to his own interests and to the interests of others.

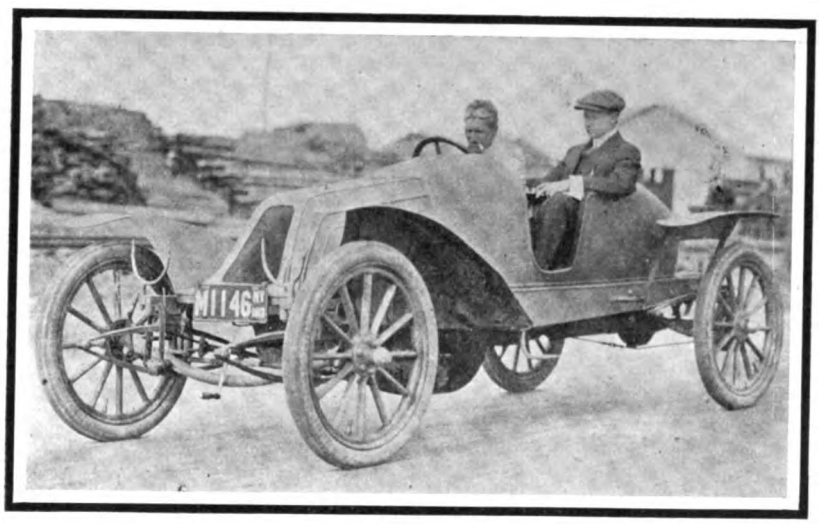
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FRANKLIN COVERS 84 MILES ON SINGLE GALLON OF FUEL

Air-Cooled Car Sets up Almost Unbelievable Record Under Unquestionable Auspices — How the Test Was Carried Out.

For a four-cylinder automobile, 20 miles on a gallon of gasolene is, as any slangy chauffeur will admit, "pretty good going"; 25 miles is unusual; 35 miles is astounding; 45 miles is nothing short of phenomenal, and to claim anything more than that is to be classed immediately with Ananias and Sapphira and other historical truth-stretchers. And yet on Saturday, 21st inst., a four-cylinder Franklin Roadster—air-cooled, of course—completed no less than 83.5 miles on a single gallon of commercial gasolene under the official supervision of the Testing Laboratory of the Automobile Club of America.

The run is a world's record, of course; it is a record for anything that runs on four wheels and is propelled by gasolene and has been beaten only by a motorcycle. The nearest to it that any one has come was on May 15, 1906, when in the two-gallon efficiency contest promoted by the A. C. A., a Franklin car carrying four passengers travelled 87 miles; that also is a record. The one-gallon record, too, was made with a Franklin car, 46.1 miles being reeled off on July 11, 1909, in the Automobile Club of Buffalo's one-gallon economy contest. By way of startling comparison, the new record is just 37.4 miles better than the old record! Figured down about as finely as it can be figured, it means that a single drop of gasolene will propel Averell and his Franklin a matter of nearly 75 feet!

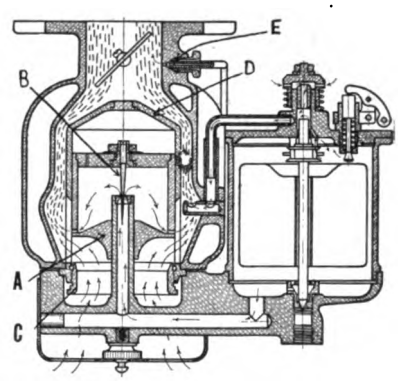


AVERELL AND CHASE IN FRANKLIN ROADSTER UNDER FUEL TEST

For just six hours, S. G. Averell, who owns the car in question, and who drove it for the H. H. Franklin Mfg. Co., of Syracuse, N. Y., in which he is interested, guided it over the roads of Long Island in an endeavor to use up that lonely gallon of "gas," and long before it gave out all of those who witnessed the more than phenomenal run were heartily tired of it, for it seemed as if the little car never would stop. When it finally did cough to a halt within a couple of hundred yards of the starting point in Long Island City, one of the party of trade paper men who trailed it in a big six-cylinder Franklin touring car scrambled out of his tonneau seat and grasped Averell by the hand. "Averell," he said, "let me congratulate you—on stopping."

The car with which the test was made is a roadster in which wind resistance has been reduced to a minimum, as is made plain by the accompanying picture; it weighed when empty 1,690 pounds and with Averell and Herbert Chase of the Testing Laboratory of the A. C. A., who acted as the supervisor, in their seats, the weight was 1,955 pounds. The gasolene that was used was purchased in the open market by the A. C. A. and tested out at 63 degrees. The dimensions of the motor are 3⅛ inches bore and 4 inches stroke, and except for the fact that it has slightly longer pistons to raise the compression, though it was not raised to the point where it could be called exceptionally high, and that a Newcomb carburetter was used instead of the usual Franklin carburetter, it conforms to stock definitions; no other changes were made in it. The chassis, however, is special all the way through and was constructed with the view of reducing weight to the minimum. The final gear ratio was 1½ to 1 and only one rear wheel was driven, the differential being inactive.

The test was started at 10:30 on Saturday morning on the Queens Boulevard in Long Island City, two blocks from the Packard service building, after Herbert Chase, assisted and watched over by three newspaper men, had carefully filled a one-gallon dash tank with a measured gallon of fuel brought from the A. C. A. laboratory for the purpose. The modus operandi throughout the whole of the test was to speed the car up to about 22 miles an hour and then to stop the motor by closing the throttle, disengage the gears and the clutch, and permit the car to coast until the speed dropped off to about seven miles an hour. The throttle then was opened and the motor started by dropping the clutch into engagement after the gears had been shifted. During the test, two stops were made because of traffic blocks in Long Island City, and one stop when the motor was stalled in attempting to turn the car on a narrow road.



NEWCOMB CARBURETTER IN SECTION

From the starting point, the route led out to Massapequa, L. I., by way of the Queens Boulevard, the Hoffman Boulevard and the Jericho turnpike; at Massapequa, which is 31 miles from the starting point, the car was turned and the return journey was commenced over the same route. The car traveled up hill, therefore, the same distance that it travelled down hill, and at the point where it finally came to rest the elevation was approximately the same as that at the starting point. Going out, the wind was with the car, but coming back the wind was against it.

That Averell misjudged the distance he could travel before his fuel gave out was revealed by his choice of Massapequa for a turning point; Long Island City was reached on the return journey at 2:40, and though it was figured that the gasolene must have been all, or nearly all, used up, the car continued to run without any signs of stopping for nearly 1½ hours afterward! During that time Averell drove twice nearly to Flushing over very poor Belgian block

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pavement, made two circles around the Bridge Plaza, and went twice out over the railway bridge for a considerable distance past the original starting point; it was on the second trip out over the bridge that the car finally quit. It is likely, therefore, that if the original outbound trip had been continued quite a little further, the total mileage would have been greater, for traffic slow-downs and poor pavements in Long Island City then would not have been encountered.

The Newcomb carburetter with which the car is equipped is produced by the Holtzer-Cabot Electric Co., of Boston, Mass., and was adjusted by E. C. Newcomb, its inventor, who accompanied the run. No doubt quite as much credit for the record is due to the carburetter as is due to Averell for his generalship in handling the car.

The carburetter itself differs from anything else of its kind in that it has a fuel metering device which is best made plain with the aid of the accompanying cross-sectional view. The metering mechanism consists of a hollow plunger (A) surrounding the pipe at the top of which the fuel nozzle is located. A fuel controlling needle (B) is fixed to the upper part of the plunger near the bottom edge of which a number of small holes are drilled to distribute the fuel after it has issued from the main fuel measuring orifice. These holes are arranged to register with an equal number of relatively narrow air slots cut in the plunger tube or chamber. The plunger is seated on a regulating collar (C), the office of which is to withdraw the fuel needle from its closed position by raising the plunger without uncovering the slots in the chamber (D).

Consequently, when air is drawn through the carburetter, the plunger lifts in proportion to the amount of air drawn. The needle in the nozzle lifts, at the same time releasing the proper amount of gasolene to charge the entering air. The amount of gasolene in the mixture therefore always is proportionate to the amount of air drawn in. To adjust the mixture, a lever traversing a graduated arc on the top of the float chamber is provided; this lever adjusts the back suction on the fuel in the float chamber; when turned toward "Poor," the back suction increases, reducing the flow of fuel and weakening the mixture; when turned toward "Rich," the back suction is reduced and the mixture enriched. This adjustment is uniformly effective over the whole range of speeds. To assist in vaporizing low grade fuels, the vaporizing chamber is enclosed in a jacket, which was connected to the exhaust and heated in this way. The speedometer used is a Casgrain, and though the original reading showed 86.6 miles, subsequent correction reduced this reading to 83.5 miles.

FOG-PENETRATING LAMPS DIFFUSE GOLDEN BEAMS

Esterline Productions Follow Scientific Theory—Ingenious Reflector Construction and Bodies Without Hinges or Humps.

The fact that the most powerful white light is baffled by mist or fog, being reflected back to the observer's eyes and increasing the apparent density of the vapor, has bothered drivers for a long time, and not a few theories have been advanced with a view to evolving lamps that would enable a light to be forced through fog. One of the theories is that yellow light will penetrate further than any other, and it is on this



ESTERLINE GOLDEN GLOW LAMP

theory that the Esterline Co., of Indianapolis, Ind., has constructed its line of Golden Glow lamps, one of which is shown in the accompanying illustration.

The lamps which bear this suggestive name have other claims upon interest than the mere fact that they give a yellow light, however, and not the least is the manner in which the reflector is made. Instead of the usual metal parabolic reflector, there is a glass one, moulded of special glass and ground to shape inside and out, after which the back is silvered and the silvering protected by a coating of copper electrically deposited. Thus the actual reflecting surface is permanently protected by glass on one side and copper on the other and needs no polishing; the glass surface is, of course, easily wiped clean and does not tarnish like metal. The glass is colored to produce the desired "golden glow" which gives the lamp its name and is responsible for its penetrative powers.

Exteriorly the lamp bodies are particularly clean and attractive, being innocent of hinges and most of the usual projections. The lens-holding device includes a series of phosphor bronze springs which hold the glass firmly and prevent rattling, and at the same time permit expansion and contraction under temperature changes and practically eliminate the risk of cracking. The glasses are readily removed and replaced, despite the absence of hinges. As the focussing of the bulb in the reflector is of the utmost importance, a thumb-screw at the back of the lamp, outside, is provided for this purpose, so that the adjustment can be quickly and accurately made without opening the lamp.

Headlights are made in four sizes, from 9¼ to 12½ inches in diameter, besides special searchlights which run up to 15½ inches in diameter and take bulbs of from 25 to 100 candlepower, and side and tail lamps. The tail lamp, be it said, is as distinctive in its sphere—which is no joke—as are the other lights in theirs, for it is formed of a solid globe of ruby glass, in which is formed a white glass lens to pass the light to illuminate the number plate. The globe is, of course, mounted in a suitable metal base which contains the requisite lugs, wire leads and bulb socket. As there are no joints to rattle or admit dirt, the lamp has features that are distinctly appealing. The name of the car can be etched on the glass or, for that matter, any desired design or monogram.

Steal Three Cars a Day in Chicago.

Although thieves in Chicago, since January 1, have made away with 540 cars valued at about $810,000, the police department makes the creditable report that cars to the value of $700,000 have been recovered and in the recovery 15 persons have been sent to jail or fined, leaving but about 70 cars still unrecovered. Many of them were taken for joy-riding purposes and were subsequently located in distant parts of the city, often minus robes, tools or other equipment. The police state that the average theft is three cars a day, each of which averages $1,500 in value.

Chicago Forbids Colored Headlights.

Colored headlights on automobiles, which are said to cause confusion because it makes it difficult to tell whether a car is going or coming at night, are prohibited by an ordinance passed last week by the City Council of Chicago; the ordinance also carried an amendment which provides that an individual, firm or corporation which puts an unlicensed driver on a public vehicle becomes liable for any damages resulting from the chauffeur's driving and operation of the vehicle.

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REILLY'S OPINION OF "TELEPHONE SALESMEN"

Declares It's Poor Policy to Cover Territory by Wire Simply Because It's Convenient—Salesman Whose Trade Fell Off Because He Preferred Long-Distance Talking to Long-Distance Walking.

Reilly and the Sales Manager argued heatedly in the former's office, which was not at all surprising, for the Sales Manager had asked Reilly's advice on a sales question and events had followed according to this now well-worn formula: Question, Reilly's opinion, Sales Manager's opinion, argument, more argument. Also the formula in one other respect held true this time in that, while the original argument started over one thing, it wasn't long in veering to another and another thing, until now the two were deep in a verbal battle as to the respective merits of various organizations and individuals in the National and American leagues.

"Now Philadelphia——" began the Sales Manager, as he pushed his hat back on his head for effect.

"This is Mr. Reilly," interrupted that individual, as he pulled the ringing telephone toward him and lifted the receiver.

"No, nothing doing to-day that I can think of just now," he replied to the questioner on the other end of the wire. "Sure! Good bye."

"Now Philadelphia——" again began the Sales Manager, who this time, having exhausted the hat-pushed-back move, pulled one foot more tightly over the other knee and hitched forward in his chair as a means of emphasizing his opinion.



"HE'S LAZY," SAID REILLY. "HE'S A TELEPHONE SALESMAN"

The Sales Manager was in position and had a finger aimed in gesticulation, and it was a shame to spoil such a good beginning, but Reilly threw him out at first with, "Aw, forget Philadelphia! This guy that just called me up is from Philadelphia; they're all alike; no hope whatever."

"Yes, but——" The Sales Manager was choking for a chance to talk.

"But nothing! If you've got to say it, write it and mail it to me and I'll look it over, but nothing good ever came from Philadelphia. That salesman who just called me up is a sample and your baseball teams will wind up just as he will."

"How? What——"

"In second division."

"Who's the salesman?"

"Byrnes, of the Blank Auto Supply House."

"Byrnes? I thought Jerry Noyes traveled through here for them," said the Sales Manager.

"He did, but they took him into the office on a better job and sent Byrnes out here a couple of months ago," replied Reilly.

"And Byrnes——"

"Is lazy," supplied Reilly.

"How so?"

Called Twice Then Used Telephone.

"Well, as an example," answered the dealer, "I haven't seen him but twice since he started to come through here. He's a telephone salesman. Noyes used to sell me quite a lot of stuff, and I suppose I was regarded as a good customer, so Byrnes, after calling on me a couple of times to see what I looked like, calls me on the 'phone as a general rule and doesn't take the trouble to come up at all."

"Does he sell you anything?"

"Once in a while—— There!" exclaimed Reilly, with a snap of the fingers. "Now that he's gone I've thought of something I need, and it often happens that way."

"Huh!" was the Sales Manager's only comment.

"Jim," asserted Reilly, "the telephone is one of the greatest blessings and one of the greatest curses that ever found its way into selling work. It can be used to wonderful advantage or disadvantage, all depending upon how it is used."

Telephone Judiciously Used a Help.

"Perhaps you're right," parried the Sales Manager.

"Don't you know I'm always right?" asked Reilly with a smile. "I am this time, anyway, I insist.

"If a salesman makes judicious use of the telephone it is a great help to him, but when he uses it just because he's too lazy to make a personal call it's a poor means of making sales. Take Byrnes, for instance. When the weather was cool and the walking was pleasant he used to cover the 'row' quite thoroughly, but since the sun got warm and the walking got hot he makes most of his calls from the hotel or some other place. I suppose he peels off his clothes in his room, orders up a couple of high ones, turns on the fan and calls up his customers. I don't believe his summer trade will show up very

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heavy—in fact, I know of several places that don't give him many orders over the telephone, and I suppose he explains to the house that trade will pick up in the fall. Maybe it will—if some competitor doesn't take it away from him this summer and have it all sewed up by the time the weather cools off."

"Don't you ever use the telephone in selling cars?" asked the factory man.

"Certainly; it's one of my greatest helps," answered Reilly. "But I don't use it when I think a personal call will be more advantageous."

"No?"

"Certainly not. I don't believe dealers who are in business for themselves—that is, live dealers—are lazy, as a rule; they are working for themselves, and the more they work the more they make, and they can't afford to be lazy. Furthermore, if they are lazy some live dealer generally gets their agency away from them. But there are some dealers and a great many salesmen who abuse the telephone.

Telephone Salesmanship That Lost.

"I don't know all about all the salesmen in town, but I do know one who is going to get the gate if he doesn't wake up. His boss, who happens to be one of my neighbors is getting wise to him and the boss doesn't approve of a man who won't work. This salesman can sell cars if he wants to; in fact, any salesman who will work hard can do pretty well, but this one is slipping down hill; he won't work.

"Just to show you a sample of how he works, or doesn't work: He got one prospect started and made a couple of calls on him, and with consistent effort I believe the man could have been persuaded to buy this salesman's car. I believe it because he bought another car of about the same size and price. But after the salesman got the deal under way he sort of laid down on the job. The prospect lives and has a little business away out on the hoopskirts of the town, and it was quite a chase for the salesman.

Face-to-face Conversation Desirable.

"Now, don't misunderstand my attitude. If the salesman had used the telephone occasionally to supplement his other work it would have been very good, but he used it entirely. He used to call this man up and try to talk car to him over the telephone. He tried to give the prospect a beautiful word picture of the car while the prospect was sitting in his office and the salesman was in the salesroom and the car was several miles from and out of the sight of the prospect. It was like trying to send a photograph by telephone. The prospect didn't come along as fast as he might, and one day when the salesman called him up the prospect said he had bought a car.

"'Bought a car!' almost shouted the salesman.

"'Well, an automobile; that's sometimes called a car, isn't it?' said the prospect.

"'Y-y-y-y-es, but I thought you were going to buy one of our cars; why did you buy that make?'

"'I did think of getting one of your cars at one time,' said the ex-prospect, 'but this one seems to be pretty good; I guess it'll do.'"

"What did the salesman do?" questioned the Sales Manager.

"All 'phone" or "No 'phone" Both Bad.

"Hung up," said Reilly. "What could he do? The sale was gone, wasn't it?"

"Gone quite a way, I should say."

"'All telephone' and 'no telephone' are equally bad," went on Reilly, "but the correct proportion is excellent. In the case of this salesman, if he had persisted in intruding his presence into the prospect's home or office every time he wanted to communicate with him he would very likely have made a nuisance of himself, and as it was his work didn't count for anything. After he got the prospect coming he should have used the telephone, made appointments, made personal calls, written letters and done all those things. In that way he could have fired many more shots at his target without making a nuisance of himself and could have done much more effective work."

No Fixed Formula for Selling Moves.

"What's your formula for mixing all those things?" asked the Sales Manager.

"There is no formula," declared Reilly. "It's a mixed-to-order affair. It all depends on the salesman and the prospect, and the salesman has got to do the mixing. It will be the same in no two cases, and a man has got to be an excellent salesman to figure it out to the perfect proportion. A proportion that is not perfect often wins, but a lop-sided method like that I just told you about is a sure loser.

"There used to be a district manager for an Eastern automobile factory who covered this territory and who tried to get me to take on his line along with yours; he called on me once or twice and then fell back on the telephone, just as he did with a number of other dealers in town. I finally told him he was wasting his time and mine calling me up, and he quit it."

"Chicken Hunter," Too, Disliked Work.

"Didn't he come to see you after that?"

"No, I guess he didn't realize that what I objected to was his trying to do business by telephone, so he kept away entirely. I will say, however, that it would not have done him any good if he had called on me personally."

"Do any of our men fall down? Any that you know of?"

"No, I don't know of any," replied Reilly; "in fact, I don't see many of them except you. But I'll bet Lugner, who used to have the territory that Meck now has, used to use the telephone quite freely in order to get himself more time for chicken hunting."

"I should say he did," exclaimed the factory executive. "That was one of the things that impaired his efficiency. He would go into a town, and if he didn't want to waste time on the dealer he would call the dealer on the telephone, say howdy and use the rest of the time for devotion to his pleasant side line."

"By the way, what's Lugner doing—got a job yet?"

Salesman Who Worked Like Real One.

"Yes," replied the Sales Manager, "he's taken that territory for one of our rivals, and I don't know whether to worry or not. Lugner is a pretty good man if he wants to be."

"You should worry!" laughed Reilly with assurance. "With Tom Meck out there Lugner is the man who should worry. Meck'll give him the hottest opposition he ever got in all his life—and it won't be over the telephone, either."

"Didn't Meck come from Philadelphia?" inquired the factory man, with an air which meant to inform Reilly that a point was being scored on the baseball argument; but the point was lost in the answer.

"No, not 'from Philadelphia' but 'away from Philadelphia'—and as soon as he got wise to the town."

Weed Conducting Window Display Contest.

A window display contest in which dealers and accessory men are invited to exhibit their skill in trimming their windows with Weed chains has been inaugurated by the Weed Chain Tire Grip Co. The restrictions are few, dealers being permitted to submit as many photographs of windows as they desire, and the entire display "layout" being left to the dealer. Photographs, however, must bear the dealer's name in ink on the backs.

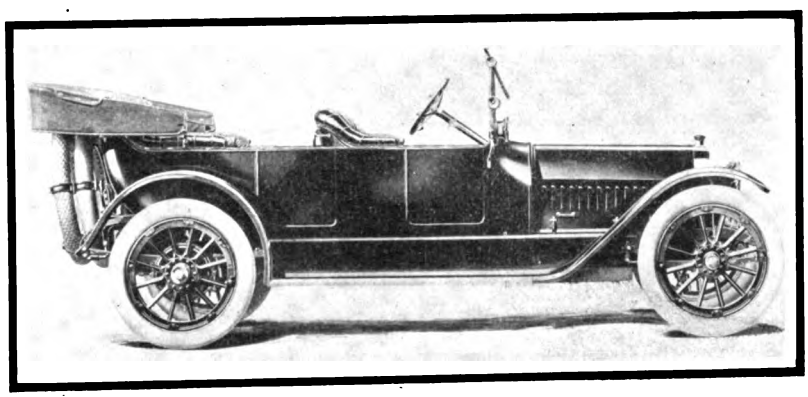
The prizes are $100, $50, and ten of $10 each, in addition to which the Weed company will advertise the winners in any newspaper the winner selects for this purpose in his town or locality. The contest closes July 15 and the awards will be made August 1. The contest is being conducted by the advertising department of the Weed company, at 37 West 39th street, New York City.

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REAL LONG STROKE MOTOR IN LATEST KISSEL "SIX"

Has Unit Power Plant with Block-Cast Cylinders—Four Speeds with Direct Drive on Third — Left Steer and Center Control.

With the first out-and-out long-stroke motor that has been installed in a car bearing the Kissel name-plate, the first model has been turned out of the new Kissel factory at Milwaukee, Wis.,—a plant that has a floor space of 250,000 square feet, is complete in itself and independent of the parent plant at Hartford, Wis., and is intended for the manufacture of this one type of car. The latest product of the Kissel Motor Car Co. is a six-cylinder machine with a bore and stroke of 3¾ x 5½ inches, respectively, and is rated at 48 horsepower; as might be expected, it embodies the cardinal features of the older Kissels, not forgetting the four-speed gearset with direct drive on the third speed and an overstep fourth.



KISSEL "6-48" CHASSIS SHOWING "KICK-UPS" IN THE FRAME

A feature of the car is the low hanging of the body, which is brought about through the skilful use of "kick-ups" at the front and rear of the frame, despite which there is ample road clearance. The appearance of the body is enhanced in no small degree by its clean outlines, the rounded pressed steel fenders and the general absence of external attachments. The dashboard has a cowl of moderate dimensions, the rear of which carries a mahogany board on which are arranged the various meters and other instruments, plainly visible by day and also by night, an electric light providing nocturnal illumination. Left steer and center control are standard.

The six-cylinder motor is an extremely smooth, neat machine with the cylinders in a single block and the valves all on one side—the left. The gearset and engine are mounted as a unit and the whole is hung on a three-point suspension. The leather-faced cone clutch, however, can be removed without taking down the gearset and without trouble. The Mea magneto and the circulating pump are driven from cross shafts at the front of the motor, and the whole power plant is conspicuously accessible. The lubrication system is of the now popular constant circulating type with the pistons oiled by splash and the crankshaft and connecting-rod bearings fed by oil forced through ducts drilled through the crankshaft. The usual reservoir below the crankcase serves to collect the returned oil, which is strained and re-circulated.

As the gasolene tank is hung low down at the rear of the chassis, the gasolene feed to the carbureter is effected by means of a piston pump which is operated by a cam on the engine camshaft. The carburetter has a hot-water jacket which, however, is intended to be shut off in warm weather. A waterproof Mea magneto furnishes the high-tension ignition current, the distributing wires being carried through a tube above the cylinders.

Final drive is by propeller shaft and bevel gears; the rear axle, in addition to being stiff and strong in itself, is fitted with a truss which adds not a little to its strain-resisting ability. Brakes are large, with ample friction surface, the drums being no less than 5 inches wide and 14 inches in diameter. The usual internal and external arrangement is employed, the external brakes being for service use and the internal brakes for emergency application.

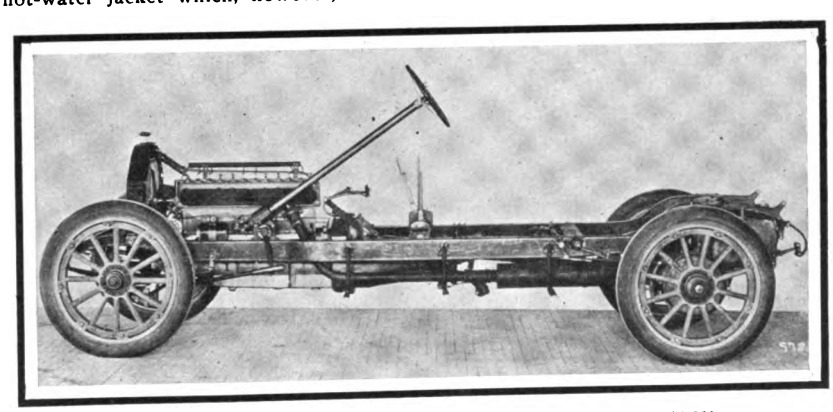
In the springing of the latest Kissel former practice has been somewhat departed from, for instead of having three-quarter elliptic rear and semi-elliptic front springs, the latest machine has semi-elliptics all round; the front springs are 38 inches long and the rear springs 52 inches, and all are 2¼ inches in width. The pressed steel frame is formed with a narrowed front and is designed to give maximum spring clearance.

The wheelbase is 132½ inches, which is just half an inch more than the 50-horsepower "four" and 7½ inches less than the big 60-horsepower "six." The tread is the standard 56 inches. Wheels are the same size all around, as are also the tires, which are 36 x 4½ inches.

It is evident from the finish and equipment of the car that it is not intended to lag behind its competitors in any respect. A complete electric lighting and starting system stands at the head of the equipment list. The top is the Golde patent one-man top, which eliminates front brackets and also eliminates much of the trouble that commonly attends the putting up of a protecting device. The rest of the list is complete, including the usual tools, of course, and shock absorbers, speedometer, odometer and clock, windshield, tire irons, rails and, in short, everything needful to put the car on the road without delay.

Close attention has been given to the matter of upholstery, which is of a special mixture of hair and is no less than 11 inches deep, covered with black leather. Access to the comfortable interior of the tonneau is through doors that are a full 21 inches wide, permitting even the most ponderous passengers to get in and out with the least possible trouble.

Three body types are built on the "six" chassis—touring car, which lists at $2,350; limousine, costing $3,850, and berline, the price of which is $4,100.



SIDE VIEW OF NEW KISSEL "6-48" WHICH SELLS FOR $2,350

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DETROIT'S FIRST CYCLECAR IS CHRISTENED CARNATION

Tandem Seats and Narrow Tread Mark New Company's Initial Product—Has Four-Cylinder Motor and Sells for $495.

Detroit has a sure enough cyclecar, and it probably is the first American vehicle with specifications that rightfully entitle it to the name originated by the Royal Automobile Club of Great Britain and applied to those miniature vehicles which are said to be creating a furore abroad. But even though it is a cyclecar, as its narrow tread and light weight make plain, its manufacturers have not hesitated to eliminate from its design at least two visible attributes that probably have influenced more than anything else the designation; the car is not belt driven, nor is it without a differential—also it shortly will be produced in four-passenger form. Otherwise, it is a cyclecar and a good-looking one, too, as the accompanying illustrations show.

In name, the car is the Carnation, and it is produced by the American Voiturette Co., of Detroit, Mich., which is capitalized at $500,000, and which has as its head Chas. B. Shaffer, who is president of the Keeton Motor Co.; William G. Houck, 2nd vice-president and director of sales of the Keeton company, is vice-president and director of sales of the new company.

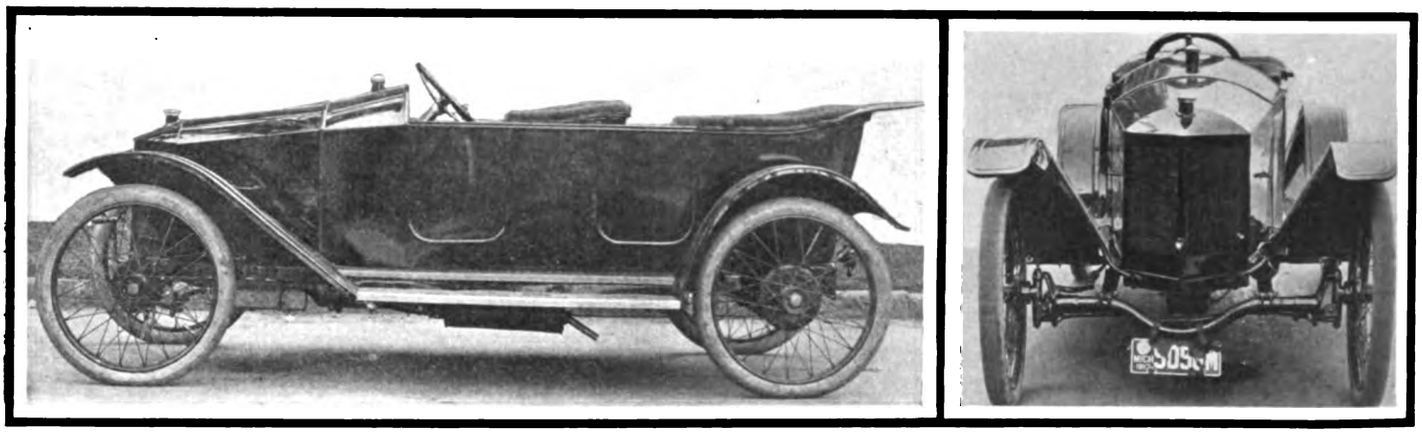
Eventually, three models of the car will be produced, the photographs which are reproduced herewith showing side and front views of the first model, in which the driver and his single passenger are carried tandem fashion after the manner of the original Bedelia cyclecar which appeared first in France. The other two models will be a four-passenger touring car with a conventional seating arrangement and a roadster in which the passengers sit side by side. The list price of the first model is $495.

It is in weight and in tread that the Carnation most nearly approaches the R. A. C. definition of a true cyclecar, which is classed as a vehicle weighing not more than 784 pounds and having an engine in which the piston displacement does not exceed 1,100 cubic centimeters. The Carnation weighs complete 710 pounds and the tread measures 44 inches. The engine has four vertical water-cooled cylinders measuring 3¼ x 3¾ inches, bore and stroke, respectively; the piston displacement therefore is 124.4 cubic inches, which is equal to 1,936.9 cubic centimeters; the A. L. A. M. horsepower rating is 16.92.

From the engine, power is transmitted to the rear wheels through the intermediary of a clutch, a three-speed and reverse selectively controlled gearset, a shaft and a live rear axle incorporating a differential of the orthodox type. The steering wheel is located in the center and the gear shift lever is placed at the driver's right hand. The original Bedelia cyclecar had, and still has, for that matter, its steering wheel placed in the center with room for the single passenger behind the driver. It differs from the Carnation, however, in that it has a twin-cylinder air-cooled motor, is driven by side belts running over V-shaped pulleys and is minus the usual differential. Having no belts to slip and break and being equipped with a proper differential, the Carnation, therefore, palpably is far ahead of the original cyclecar idea as embodied in the Bedelia.

Wire wheels are used exclusively, and they are shod with 30 x 3-inch tires both front and rear; the brakes are mounted on rear-wheel brake drums; the wheelbase is 100 inches. Despite the light weight of the car and its small size, the body is roomy and low-hung, and it is said that the car is capable of a speed of at least 50 miles an hour.

In appearance the car is unlike anything else of its kind, what with its slanting hood, its V-shaped radiator and its peculiar seating arrangement. The upholstery is done in Bedford cord cloth and the seats have a backward rake that is calculated to make them the acme of comfort. Standard equipment includes a round windshield, electric lights and all the other usual fixtures of the ordinary light car.



SIDE AND FRONT VIEWS OF DETROIT'S FIRST CYCLECAR—THE CARNATION

Dealers Still "Blaming the Magneto."

While it is still possible to pardon an owner for thoughtlessness of the sort, it was supposed that there was no dealer or repairman now in the business who had not learned that when ignition appears to be at fault one of the most elementary tests is a change of spark plugs, which usually will betray ignition trouble.

That not all dealers have learned the simple lesson, however, is instanced by the Briggs Magneto Co., of Elkhart, Ind., which only recently was obliged to send a representative all the way to Florida to prove to a car manufacturer and a dealer that the Briggs magneto was not at fault when trouble of the kind arose. The dealer had received a shipment of several cars, none of which could be made to start. As too often is the case, the magneto was promptly blamed, but the Briggs expert, after making the long journey, quickly demonstrated that the fault lay entirely with the plugs; the porcelains of all of them were porous. The substitution of good plugs for the defective ones immediately and permanently remedied the trouble and exonerated the magneto from blame.

Would Eliminate "Dead Beats" in St. Louis.

The move by St. Louis dealers for the elimination of bad credits has taken the form of a petition to the tradesmen asking them to put their businesses as nearly as possible on a cash basis. At a meeting last week of the St. Louis Automobile Manufacturers' & Dealers' Association 30 of the dealers agreed to the proposition and the assent of others is being sought.

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LITTLE CARD THAT IS A BUSINESS KEYSTONE

Dealers in Syracuse Retain Growing Trade Through Medium of a Diminutive Service Calendar—Owners' Directory and How It Helps Sales—Rivals Can Have It if They Want It and Dealers Don't Worry.

A New York banker, so the story goes, sat in his office one day talking with another man, when a third man thrust his head through the door and shouted, "Quarter?"

"Yes."

"Month?"

"Yes."

"Four and a half?"

"Five."

"Right."

The door banged and the high-speed visitor was gone, while the man who had been conversing with the banker stared in amazement. "Is he crazy?" he asked.

"No," the banker replied, "he's a busy man from Chicago, and I just loaned him a quarter of a million for thirty days at 5 per cent."

Maybe it's true and maybe it isn't, but there isn't any particular reason why it shouldn't be true, for many a big deal has hung on a smaller thing than that and many a small thing has been the basis of a big deal or a big business.

A master mechanic in a small steel mill, when called upon to repair a fractured hammer bed, of iron, drilled holes and screwed the two parts together, each day battering down the screw heads as the two sections were hammered closer together. But—each screw was kept from moving by a powerful cement. A master mechanic from another mill, having heard of the repair job, came to look it over. The successful mechanic told how it was done—but he kept the cementing part a secret. The result was that when others tried to do the same kind of a job they failed, for the screws would not set tight. The little daub of cement was the thing that was lacking.

To say that a card, 2 inches wide and 3¼ inches long, could be the secret of success for a dealer who does a big and paying business might seem presumptuous, and the Genesee Motor Car Co., of Syracuse, N. Y., which employs the card, might smile at the imputation, but an analysis of the business which is done by the proprietors, C. H. and G. H. Norris, shows that more than they might think hinges around just such a card. Of course, the card is but a part of their business system, but it in reality is a keystone, a basic element in making sales, or an indicator which points to the principles employed in the business.

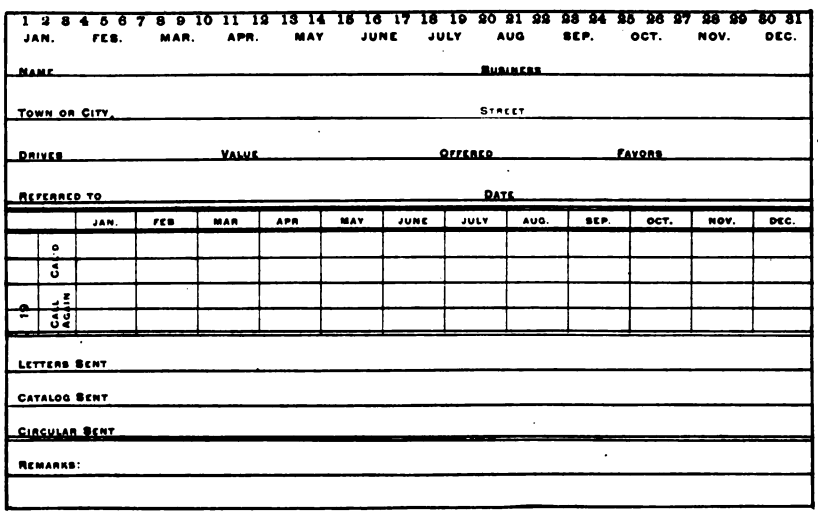
Calendar that Helps in Service.

This card is a little calendar, and there is a different card for every month; across the top in underscored red type is the word "Remember" and at the bottom of the card, "That we want your car on the morning of the above date." Stamped in blue upon the calendar, a hand points to an encircled date, which is the company's notification to the owner of a car that at such a time his car should be at the service station for a monthly inspection.

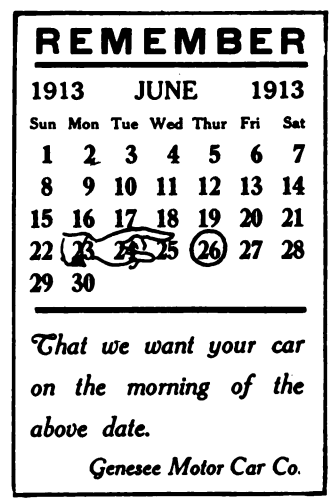
So much for the card; thus far it doesn't look much like the keystone of a business structure. But—this card is the important element in the dealer's service, the dealer's service makes friends of the car owner, the car owner furnishes the majority of the dealer's prospects, and these prospects furnish the profits of the business; so while other things contribute the little card stands out predominantly. Every new owner gets one of these cards every month during the first season of his ownership and the card, standing upon his desk with the hand pointing at the date, furnishes a never-failing reminder of the day he must have his car inspected. Also, the owner is always in possession of a calendar for the month in transit.

Prospects obtained from owners are the mainstay of the Norris brothers' business, and the owners' list is an important element in the conduct of the Genesee Motor Car Co.'s affairs. Making one car sell another is an angle of salesmanship to which they pay particular heed, and that nearly 400 Cadillacs are running in their territory is one indication that the pathway they have chosen to follow is not an undesirable choice.

After a man has bought a car and has taken it to the service department, it is in-



GENESEE'S RECORD OF PROSPECTS AND FOLLOW-UPS



MONTHLY SERVICE REMINDER

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spected by a mechanic who can slight no part and successfully evade detection. He has a form which governs his work, and he must inspect every part and its functioning, even to the inside of the clutch and the oil levels in the transmission, differential and motor. When he starts his inspection of the motor, the first item is the carburetter, then the valves, the connecting rods, the oil level, circulation and general condition. After each separate inspection he notes the result and, when he has finished, the owner or his chauffeur signs the blank, acknowledging the amount of time spent on the car. Inspections are free, but necessary work is charged for.

Inspections Often Much Extended.

The company's attitude to owners is shown by the number of inspections which run over into the following season. Jones buys a car in September; the inspection guarantee is for a season, and the season is near its close. Jones asks if his inspections may not extend into the next season, and they are extended not only into but through the following season. The prospects which are furnished by owners are of as great a variety as are owners.

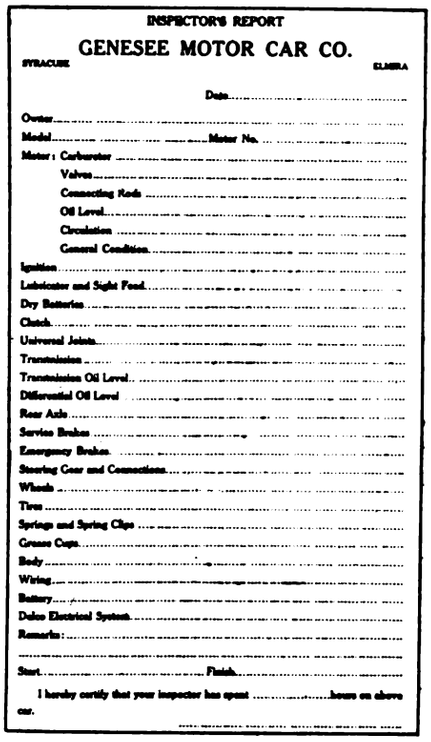
"We learn after a while to distinguish likely and unlikely prospects by our knowledge of the owners who furnish the names," said G. H. Norris. "There are owners who are so anxious to help us that they will give us the name of a man if he so much as mentions the word car, while others are more conservatice and, while they do not furnish so many names, those they give us yield a larger percentage of sales.

"Our owners' list is one of our best advertising assets, and we make full use of it. We have compiled a booklet of Cadillac owners in our territory and this, we have found, is very valuable. The booklet contains nothing but names, and I know of salesmen for other cars who carry our owners' directory in their pockets. I suppose their idea is that they may be able to pull some of our owners away from us and sell them the cars they handle, but thus far we have found no occasion for worry and are still distributing the booklets. We believe that after we have sold a man a car we are quite likely to be able to keep him for a customer.

Owners' Directory as Aid to Sales.

"The list is revised and the booklet reprinted quite frequently, and we always see to it that the car owners gets copies; the owners like these booklets; they show them who owns cars. When we send one of these directories to a man who is on our prospect list it is quite likely to do more toward selling a car than any salesman could do. We simply mail him the list; he opens the book and right off, on the first page, he finds 14 cars owned by men connected with the Solvay Process Co. These are men, many of them, who are worth millions, and if these men, who are able to buy any kind of car they want, have picked out a Cadillac, it is a sales argument which doesn't need much talk it back it up."

The booklet is 3½ x 8¼ inches, and is easily carried in the coat pocket. Besides the owners of whom Norris spoke, there are many doctors and business men, and the list, on the whole, makes a very creditable showing. The latest edition of the directory


INSPECTOR'S REPORT

GENESEE MOTOR CAR CO.

SYRACUSE ELMIRA

Date.....

Owner.....

Model..... Motor No.....

Motor: Carburetor.....

Valves.....

Connecting Rods.....

Oil Level.....

Circulation.....

General Condition.....

Ignition.....

Lubricator and Sight Feed.....

Dry Batteries.....

Clutch.....

Universal Joints.....

Transmission.....

Transmission Oil Level.....

Differential Oil Level.....

Rear Axle.....

Service Brakes.....

Emergency Brakes.....

Steering Gear and Connections.....

Wheels.....

Tires.....

Springs and Spring Clips.....

Grease Cups.....

Body.....

Wiring.....

Battery.....

Delco Electrical System.....

Remarks:.....

.....

Start..... Finish.....

I hereby certify that your inspector has spent .....hours on above car.

.....

WHAT THE INSPECTION COMPRISES

contains 357 names, scattered throughout Central New York.

When a prospect is entered on the agency's list for following up, his name is placed on a card which is very complete in the information for which it furnishes space. The card tells the name of the man, his address, business, the car he drives, its value, what he wants for it, the kind of size or style of car he favors, the salesman to whom the prospect was referred, the letters, catalogs and circulars mailed, the dates the salesman has called and has arranged to call, with months and dates across the top for the checking of past and future demonstrations.

Each salesman is given a record of the work he is supposed to do each day, and a report of what he did is supposed to be in the hands of his employers the following morning. If he has failed to get to any of the assigned tasks they are given to him again, but if the man was seen the call is noted, any remarks to be made are entered and the card is filed with the date of the next call noted thereon. These cards are obtained from a company making a specialty of this work.

In seeking a location the Genesee Motor Car Co. selected an advantageous spot at 252 West Genesee street. This is three blocks from the very center of the city and the business section, and is on the old New York State Genesee turnpike, the thoroughfare of across-State travel and also of most of the travel to the western part of the city. The service department is maintained at another place because of lack of room where the salesrooms are located. The salesrooms are on a corner, which feature alone is an asset. In addition, the company handles Mack trucks, a number of which are, like the pleasure cars, paving the pathway to more sales.

Lubricating the Worm Gear Drive.

The lubrication of worm gearing always has constituted more or less of a problem, and the best way to solve it, according to the inventor of the Lanchester type of worm, is to use a mixture of nearly equal parts of castor oil, sperm oil and lard oil. "The advantage of mixing them," he says, "is to get the physical properties suitable for the occasion. Thus, where leakage is important an oil like lard oil with a tendency to solidify when not in use may be advantageous, or for the same reason, a highly viscid oil like castor oil from its leaking less while at work may be indicated by the conditions. On the other hand, when leakage is effectually prevented, it is better to add sperm oil in order to keep the mixture constantly fluid."

Where High- and Low-Tension Differ.

The lower the voltage of an electric current the more easily it is affected by dirty contacts and the like. A high-tension current will ignore an imperfect contact and go on its way, where a low-tension current might be interrupted. So it is that primary currents are easily insulated but are prone to suffer from unclean connections, while high-tension or secondary currents not only will break through films of oxide or other foreign substances, but will go through insulation also if there is half an opportunity.

Gaskets That Must Be "Punctured."

In fitting new gaskets to an engine it is well to remember that water or gas will not pass through the material; which is to say, the holes in the center should be cut out. And even if the advice does sound foolish to the experienced repairman, there have been cases aplenty where uncut gaskets have been fitted and a worried half hour spent in discovering the fault.

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ELECTRICAL CONTROL OF GASOLENE AUTOMOBILES

What May Be Done as a Logical Sequence of What Already Has Been Done—Growth of Electrical Control From Nothing to Gearshifting—Future Possibilities; Cars Without Levers, Controlled by Switches.

No one can tell, from the way a thing begins, how it will end. No one can guess, from the direction of a growth at the start, what the direction will be in future years. No one, least of all, perhaps, those most interested can predict with any degree of certainty how given results may be brought about. Even after the flitting past of a decade, regardless of the seeming permanency of such results.

Increasing scientific knowledge, improvements that inevitably follow in the wake of science, new discoveries and inventions, help to turn topsy-turvy prognostications based on existing conditions, regardless of future possibilities. Especially is this true of the development of a highly complex, highly specialized mechanism, such as the automobile is—a machine which includes, in its compact assemblage, so many of the best results of years of invention and specialization. For while it is true that, so far as control is concerned, the automobile has been simplified to such a degree that almost anyone can learn to handle it satisfactorily, the fact of its complexity remains and that complexity has led to developments in directions probably utterly unthought of by pioneers.

Earlier Cars Entirely Unelectrical.

Electrical equipment was wholly missing even on the best of the earlier cars. Even ignition was accomplished without the aid of the mysterious fluid, the requisite heat for ignition of the charges being supplied by the old-time hot tube apparatus, which had been brought to a state of considerable efficiency in stationary engines. Electric ignition had to fight its way against the elusive nature of the currents as well exemplified in the first crude electric ignition installations, and criticism that was not only harsh, but in a measure justified by the then freakish antics of the extraordinary device, was the order of the day. A conviction that they were fundamentally right, coupled with the superior results obtained when electricity could be made to do the work, caused the advocates of electric ignition to persevere—and everyone knows the result. Ten years ago there were costly motor cars in the United States with a hissing lamp and a glowing plug on each cylinder. To-day there are few owners of cars who have seen a hot-tube machine.

While the single fact that the electric ignition system stands alone in its own little world it is significant in itself, in that it brings out the truth that the fittest is bound to survive, it is even more important in that it is the starting point of a series of developments based upon the use of electricity as a tractable servant.

Many Devices not Yet Wholly Developed.

Probably few have thought much of it; but a little thinking backward will serve to bring to the minds of many who have watched the automobile grow the fact that electricity has been made to do, either experimentally or in a commercially practical way, many things about the car that either were done, or still are done, by other means. Illumination was an early and logical development, though it has taken some time to evolve the modern systems with complete automatic power plants—veritable little "central stations" with all requisites for practical operation.

The story of the electric starter is still in the telling, and the electric gear-shifting system still is so new that, though adopted as standard equipment on several well-known cars, it is almost unknown, so far as the mass of car users is concerned. Electrically operated horns are commonplace, and electrically operated speedometers are in use on thousands of machines. Electricity supplies heat for hand and foot warmers, for raising the temperature of the carbureting system to facilitate starting, to assist in vaporizing the heavier fuels, for operating vulcanizers.

Electrification of Cams and Brakes.

The magnets or oslenoids in electric gear-shifting systems have been applied, tentatively at least, to the work of braking and of operating the clutch, while smaller magnets have been arranged to work the motor valves, the camshaft and its cams being replaced by a rotating contact-maker which distributed current to the valve magnets in proper sequence.

Electricity has been pressed into service as a means of transmitting the power of the gasolene motor to the rear wheels, and various forms of apparatus have been designed for this purpose, varying from a motor and dynamo set delivering current to the electric motors driving direct to the rear wheels, to a highly ingenious system in which the magnetic drag of the field, attached to the driving member, caused the armature, attached to the driven or rear wheel system, to rotate. In short, it is difficult to think of any application of electricity to the automobile that has not been attempted.

The point, however, is not so much that things have been attempted as that they actually have been done more or less successfully; the fact that some have been tried and found wanting has little or no bearing on the question, any more than has the fact that electric ignition was found sadly wanting at first, or that the first electric starters and the first electric gear-shifting devices were of very little use, commercially speaking. It is commonly said, with regard to the gasolene motor, that if there is a proper mixture, a hot spark and good compression, the motor must run. The same principle holds good with regard to electrical apparatus. If there is the proper current, adequately insulated, and the conditions are normal, electricity unfailingly will do its work.

"Elusiveness" Often Source of Trouble.

But the very fact that electricity is so easily directed—that literally the touch of a button suffices to control energy amounting to many horsepower—is the beginning of trouble. Electricity is very commonly and very accurately described as being "elusive," and if the conditions are not what they should be the current goes wrong as readily as not. It has taken years to learn how to make insulation; how to make switches that can be depended upon to make good, clean contact at all times; to get the most out of a given quantity of iron and wire traversed by a current of given energy. A single defective contact in an electrical system may make the whole apparatus inoperative, and a single leak may rob it of its power. And these two things—the certain establishment of proper contact at the proper time, and the keeping of currents to the designed paths—have by their simplicity been stumbling-blocks in the use of the comparatively mild currents employed in automobile work.

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What will be the outcome of the present activity in the development of electrically operated auxiliary apparatus on automobiles remains to be seen, but there is a good deal that seems logically certain. In many cars electricity has assumed the whole burden of starting the motor, to say nothing of the more commonplace ignition and lighting service; it is depended upon absolutely to sound warning signals, to operate speedometers and now to shift gears—a task which is of such importance that the failure of the apparatus to function normally might lead to the most serious consequences. There seems no good reason why it should not be made to perform still further service. A certain amount of brute strength is required for the operation of the brakes and the clutch. Electricity has been applied to both these tasks with results that were no worse than the early results obtained in the use of electric starting and other systems, and the present knowledge of the art should be sufficient to cope with the problems involved in working brakes and clutch electrically.

The mere fact that a considerable number of magnets or solenoids may be required makes no difference, if all are reliable in operation, any more than the fact that six or eight cylinders are used in a motor makes it unreliable. Adding units cannot add trouble if the units themselves do not make trouble. If it is possible to build an electrical controlling apparatus that will work unfailingly in one place, the same principles can be applied in other places.

Dream of "Complete Electrical Control."

There now are cars running in which electricity is employed for lighting lamps, starting the motor, igniting its charges, sounding the horn, operating the speedometer and, finally, shifting the gears—and no trouble is experienced or looked for under ordinary conditions. It is not, then, going much further to conjure up the automobile of the near future, in which one of the important features will be "electrical control throughout." In fact, the expression "conjure up" smacks too much of the imagination, perhaps, for it seems not improbable that complete electrical control will not be long in coming. For that matter, it is not by any means impossible that cars embodying such features already are on the road, or at least on the boards of designers, for such things take form and have existence long before others than those closely connected with their creation and evolution have any idea of their existence.

It seems probable from the present trend in the use of electrical apparatus that complete electrical control will include a switchboard or keyboard within the circle of the steering wheel rim, carried as are the controllers of existing lighting, starting and gearshifting systems; possibly foot buttons will be employed for braking, though whether the "cleaning up" of the floor will be better than a division of labor doubtless will have to be decided by actual experience. A perfectly practical braking control would include a small controller lever, operated, say, by the thumb, and having a range of movement of perhaps two inches; the first half-inch would energize the clutch magnets and throw out the clutch, an automatic governor at the same time curbing the tendency of the engine to race. Further movement of the controller would increase the pressure on the service brakes, and then throw in the emergency brakes. A quick sweep of the lever would throw the clutch out and both brakes into action exactly as if both pedals were pressed in a car in which the service brake and clutch were interlocked.

How the Clutch Could be Electrified.

The clutch could easily be separately operated by a separate button, with only the addition of a little more wiring. The disablement of the service brake from any cause would mean merely that the lever would have to be carried over to the emergency position. One of the beauties of an electrical system is that many modifications of these arrangements are possible without any increase in complication.

It does not seem as if anything could be gained by electrical control of the accelerator, auxiliary air or ignition; but electrical governing of the motor under certain conditions might be very useful, such, as already mentioned, as when throwing out the clutch. Again, the racing of the motor immediately after starting could be checked. These things could be, and are, done mechanically, however, and it is in the handling of heavier work that the electrical idea seems to hold the most promise. Electrical steering gear is not merely a possibility, but a thing that has been developed to a certain degree and, though successful so far as actual working was concerned, and entirely reliable, was not "worth the candle," figuratively speaking.

Driving Then Easy and a Pleasure.

There certainly is much that is attractive in the idea of driving a car that is fitted with "complete electrical control." The driver sits at his ease and does no more arduous work than is involved in the handling of the steering gear. Gear-shifting is reduced to the mere pressing of a button, and even this may be half done in advance by pressing the button of the next gear that will be required and, when the time to change arrives, merely pressing the clutch button to make the actual change. Approaching a sharp turn and with the car at speed, all the work is done with one thumb; the clutch is thrown out, the service brake applied with a force that is dependent upon the swing of the little lever, and the automatic governor takes care of the motor while the clutch is out. If the motor stalls, there is a button to press which instantly starts it. If the motor is unable to run, or if fuel is exhausted, the starting motor will propel the car for a considerable distance—far enough, say, to find help or fuel or a place for the car.

Incidentally, the storage battery will be an important part of the "complete electrical control" and, while it doubtless will be found advisable to make it somewhat more capacious than the starting and lighting batteries now in use, it can be so amplified without greatly increasing its weight—and in any case 150 pounds or so is very little to an average car and a great deal in a battery. Moreover, batteries are improving every day, growing more efficient and powerful, pound for pound, and it is safe to say that trouble from this source is quite unlikely.

Lessening Work Popularizes the Car.

Complete electrical control seems certain as a development of the near future, for if a man does not want to crank his motor, or change his gears, neither does he desire to pull at his brake levers or kick his clutch out. There are those who declare that they would not care to drive a car in which there was "nothing to do"; but the fact remains that the less there is for a driver to do the more people will drive cars and buy cars, and for every one who wants to "do something" when driving there are ten who will be attracted by the simplicity and foolproofness of the controlling system that eliminates so many possibilities of human error.

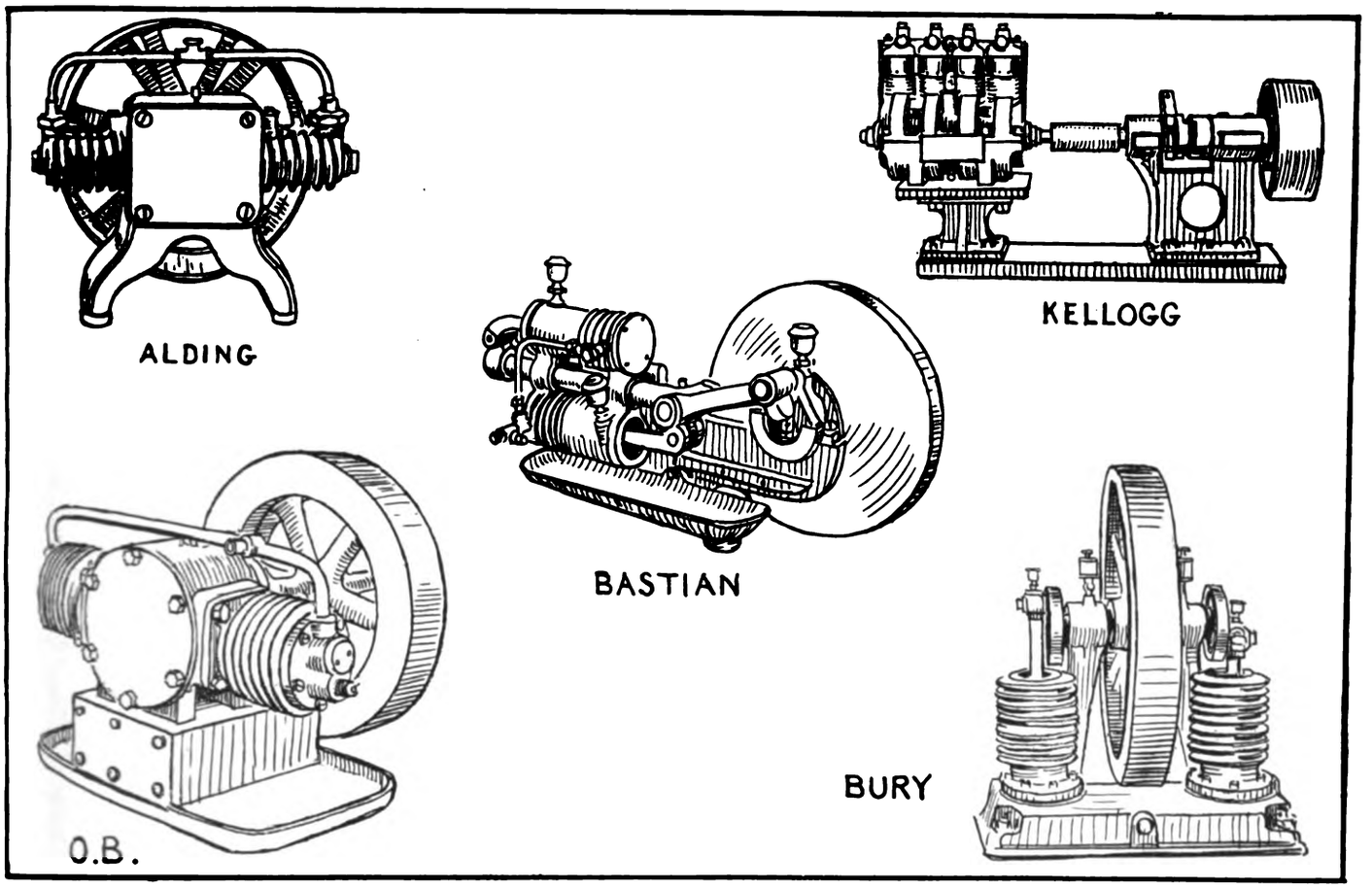
Kohl to Undertake Globe-Girdling.

Over two exactly opposite and very different routes, three Henderson cars will be started for San Francisco on July 1st, two of them in the hands of R. P. Henderson and Ray Harroun, respectively, going west with the Indiana "boosters," and requiring 26 days to make the trip, and the third, under the guidance of Edwin P. Kohl, heading eastward on a globe-girdling undertaking that will occupy two years. Kohl hopes to reach the Pacific Coast in time for the Panama-Pacific exposition in 1915. The two cars that are to be driven by Henderson and Harroun are touring models and will make the journey on kerosene with the aid of Harroun's kerosene carburetter. Kohl's car is a roadster and will be run on gasolene.

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TAKING GARAGE DIVIDENDS OUT OF FREE AIR

How One Man Increased His Business and the Satisfaction of His Patrons With the Aid of a Small Compressor—Variety Revealed by a Study of Power-Driven Air Pumps—One and Two Cylinders Contrasted.



FIVE TYPES OF MULTI-CYLINDER COMPRESSORS SUITABLE FOR THE AVERAGE GARAGE

y Rea was—and still is, for that mat- the proprietor of a successful garage. ccess is dependent upon a whole of circumstances, and the keynote of is that his customers are satisfied cus- rs

y are satisfied because they get good Cars are washed and brass and is polished, as should be done—as ner himself would do it if he could ord to pay some one else to do it Rea keeps a small but complete of such supplies as are in most de- and he keeps his customers in good by retailing them at the prices asked for them by supply stores. he one thing that seems to please his mers most is that they have consider- ess tire trouble than do the custom- any number of garages within a of several miles. And they ascribe reason for the absence of blow-outs and uts and bruises to Rea himself.

Rea is an analytical sort of a chap, which probably is one reason his garage keeps a roof over his head, pays his wife's bills and takes the childer to the seashore for the summer. He sought some way to tickle his customers, to make them feel that he, Rea, was looking after their personal welfare and after quite a little thought he discovered the answer to the problem.

Tire Trouble Source of Inspiration.

He figured that the average motorist has more trouble with his tires than he has with any other part of his car; he figured, further, that the trouble was not with the tires themselves, for tires as they are made at present are a great deal better than ever they were before. Ergo: The trouble must be up to the owner. And as no one can prescribe the way a person shall drive a car in order to save his tires and expect the instructions to be carried out, he decided that the best way out of the difficulty was to do something to the tires that would make them more resistant to abuse. And he found, as many another person has found, that the best way to save tires is to keep them well inflated. So far, so good.

Rea's shop, in common with a great many other shops, is comparatively complete. Which is to say, it is equipped to turn out a limited amount of machine work. There is a lathe and a shaper, a power drill press and a power hacksaw, all operated from a small electric motor slung up under the rafters and driving through an overhead shaft that runs the length of the shop. Hence, it was comparatively simple for him to provide for the proper inflation of tires.

He purchased a small single cylinder air compressor and a storage tank and belted the compressor to the overhead shaft. Then he called the attention of his customers to the fact that the installation was complete and invited them to make free use of it; he encouraged them to hitch the air hose

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to the valves of their tires every day before they went out on the road; he had a couple of big signs made setting forth the advantages of proper tire inflation, and these he posted near the door, where every one passing out could see them—could not fail to see them.

Benefits from a Small Initial Outlay.

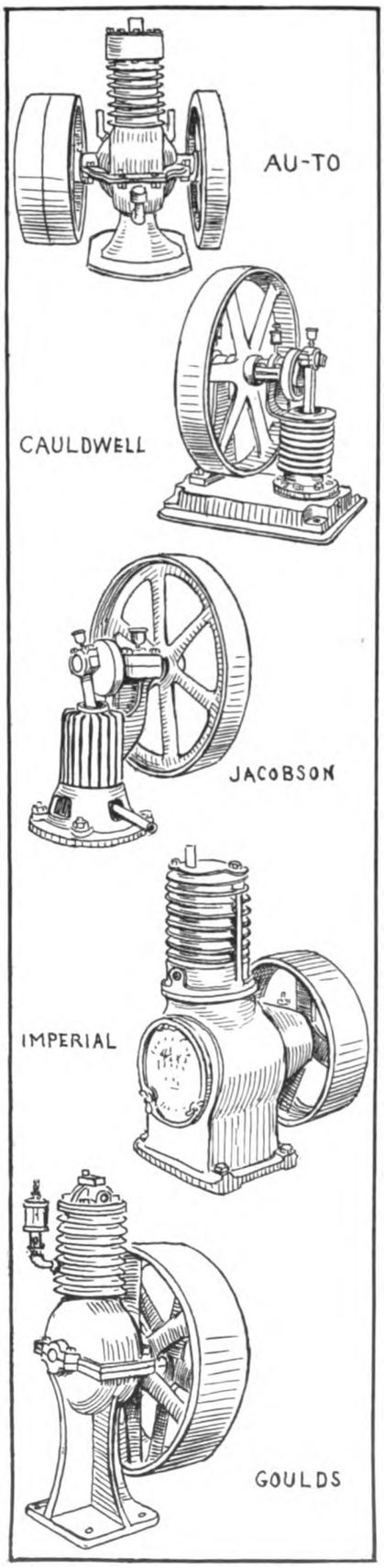
The whole installation did not cost more than $100; it cost him practically nothing to run, for as long as repair work was in progress the electric motor must run and the air compressor ran, too, as a matter of course. It required very little power. Of course, it was not necessary for it to run all the time. In the morning it was started up and run for half an hour or so to fill the storage tank, and then it was shut down until the pressure in the tank dropped. Just before closing time at night, the compressor was hitched up for a short time and the tank filled, and as there were few calls for air during the night, it never was necessary for the night man to start the compressor.

The ultimate result of the investment was that Rea's customers got more real service out of their tires then they ever got before. Because the tires were properly inflated, blow-outs were practically eliminated and rim cuts disappeared altogether; Rea's good will increased immeasurably, and today he is the most successful garage proprietor in his vicinity. And it can all be traced directly to the installation of the compressor—a nifty little single-cylinder device that cost him just $35.

Variety that Obtains in Compressors.

In choosing the compressor, Reo spent more than an hour in conning over a score of catalogs received in answer to inquiries sent to manufacturers; he was surprised—and probably most other persons would be surprised, too—at the great variety from which he had to choose. He found compressors large and compressors small, some of them air cooled and some of them water cooled, some with one cylinder, some with two cylinders and some with four cylinders. In the end he chose a single-cylinder air-cooled compressor, for he figured that as it was not for continuous service water cooling was not necessary, and that as his garage was not an exceptionally large one a single-cylinder pump would be large enough for his purpose. Many of the manufacturers, he found, make any number of types of compressors, both air and water cooled, some of them cheaper than the one he purchased and some of them more expensive.

The one he chose is suitable for any number of medium-sized garages, as are any of the others that are illustrated and described herewith; obviously, not all those manufactured are illustrated, for to do so would require a great deal of white paper and ink. Those that are illustrated have been picked out from among a great many because of their low cost, simplicity and suitability for the average garage. They embrace one-, two- and four-cylinder outfits and all of them are air cooled; hence they may be installed almost anywhere, the only piping required being that used to convey the air.



VARIETY IN ONE-CYLINDER PUMPS

Simplicity of Construction a Feature.

The power required to drive any of the single-cylinder compressors illustrated is small; it seldom exceeds one horsepower per 100 pounds pressure, and 100 pounds pressure is plenty; capacity is determined by the speed of the pump or the size of the storage tank. In many cases the tank may be dispensed with and the compressor used direct. In construction they are simple and automatic and, save for occasionally oiling, they never require attention from one season's end to the next.

The simplicity of construction that is possible is made very plain in both the Spacke, which is made by the F. W. Spacke Machine Co., of Indianapolis, and the Caldwell, which is made by the Chicago Pneumatic Tool Co., of Chicago, Ill.; in both of them the floor space required is negligible, and this is particularly noticeable in the Spacke, which can be mounted on a bench, if necessary. Both of them—and all the others, for that matter—are designed to be run by belt and, where desired, a tight and loose pulley can be supplied. The Spacke cylinder measures 3 x 5, and the working pressure is calculated at 125 pounds to the square inch, and the Caldwell cylinder measures 3½ x 4 inches with a working pressure of 200 pounds; both of them are made in several sizes, these being the smallest that are made. The power required to operate either of them at full load does not exceed one horsepower.

Characteristics of Air-Cooled Cylinders.

With regard to air cooling for compressors, experience has proven that for comparatively low pressure—up to 250 pounds—excessive overheating will not take place on continuous runs up to 15 hours or more, and where the compressor is placed in such a position that a draft of air blows on it continuous service without overheating often can be pushed to a much greater length of time. For higher pressures and more continuous service, water-cooled cylinders are to be preferred.

In some cases, to facilitate cooling, the flywheel or pulley spokes are made in the form of fan blades, this construction being followed by the Curtis Mfg. Co., of St. Louis, which produces Curtis compressors in a number of styles and sizes. In the type illustrated, the bore and stroke are 2 and 2½ inches, respectively, and up to 250 pounds pressure only one-half horsepower is required. The speed is 350 revolutions a

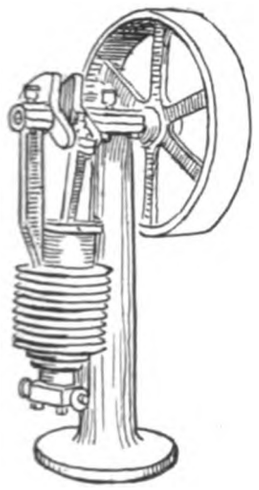
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...re, and the delivery is 1½ cubic feet of ...air a minute. The Curtis differs from ...thers in that the base is partially en...sed.

Surprising Capacity of Small Pumps.

...nerally, air compressors have two ...s—inlet and exhaust—though in the ... Imperial compressors produced by ... Ingersoll-Rand Co., of New York City, ... function of the inlet valve is performed ... the piston, which uncovers a cylinder ... on the downward stroke of the piston. ... compressor illustrated differs from ... the others also in that the base is ...pletely enclosed. The bore and stroke ... 2½ x 3 and at maximum speed of 700 ...olutions a minute 1.5 horsepower is re...ired to pump six cubic feet of air a min... at 100 pounds pressure; needless to ... several larger sizes are made.

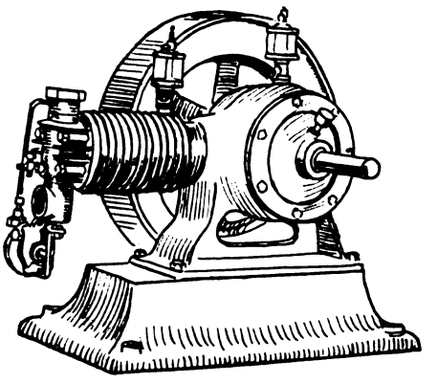
...e Goulds compressor and the Au-To,



SPACKE CONSTRUCTION

...mer made by Goulds Mfg. Co., of ... Falls, N. Y., and the latter by the ... Compressor Co., of Wilmington, ... both have enclosed crankcases and ... somewhat similar in design, except that ... Goulds has only tight and loose pulleys ... the Au-To has a flywheel as well. ... Goulds, the cylinder is lubricated by ... feed drip glass and in the Au-To ... ation is carried on by splash from the ... case compartment. The cylinder di...sions of the Goulds are 2½ x 3 inches ... the Au-To 3 x 4 inches, and both ... nstructed to be operated at from 100 ... pounds pressure; the maximum pres... guaranteed with the Au-To is 300 ... and the machine is designed to run ...uously at 200 pounds without over... Not more than one horsepower is ... red to operate either.

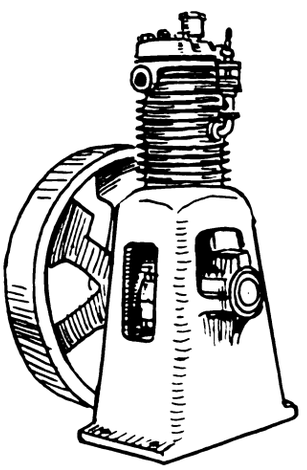
...e Jacobson air compressors, produced ... Jacobson Machine Mfg. Co., of War... Pa., differ from any of the others in ... radiating fins are cast vertically to permit free upward circulation of the heated air. The one illustrated is a compact machine designed particularly for garage service where the minimum of necessary attention is desirable. The bore and stroke are three and four inches, respectively, and



GARAGE HORIZONTAL CYLINDER

at 200 revolutions a minute the discharge is 3½ cubic feet of air a minute. The power required to operate it is one horsepower per 100 pounds pressure. To permit the compressor to be operated by hand, the flywheel is fitted with a handle.

The Garage single-cylinder air compressor, which is made by the Standard Pattern & Mfg. Co., of Richmond, Ind., differs from any of the others, principally in that its cylinder is horizontal; it is equipped with a very heavy flywheel to obtain steadiness in running and eliminate "flapping" of the driving belt and is otherwise distinctive by reason of the fact that it is equipped with an "unloader," the office of which is to regulate the valves so that when the tank



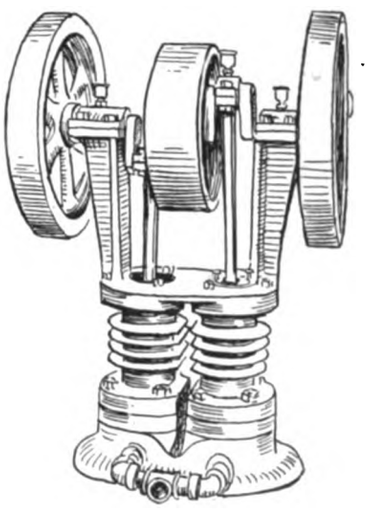
CURTIS COMPRESSOR

is filled to a predetermined pressure, the compressor requires no power to drive and simply runs idle. The cylinder dimensions are 3⅛ x 4 and at 250 revolutions the capacity is 4½ cubic feet of free air per minute, from ¾ to one horsepower being required to obtain up to 150 pounds pressure.

The single cylinder air compressor undoubtedly is the simplest air compressing device, and where the demands made upon it are not too great it can be expected to perform indefinitely without trouble and to furnish a supply of compressed air adequate for the moderate sized garage where the air is used for tire inflation alone. But for large garages, where the demand for air is considerably greater, as when air is used for cleaning, for instance, as well as for tire inflation, it is likely that a twin-cylinder pump operating at fairly low speed would be much more satisfactory than one having only one cylinder and operated at a higher speed than it normally is constructed for. In pumps of the kind there is quite as much variety as there is in those of the single-cylinder type.

Advantages of Two-Cylinder Types.

In several respects, the employment of two cylinders instead of one has advan-



AU-TO TWIN COMPRESSOR

tages over single-cylinder construction. Outside of the fact that two cylinders supply twice the volume of air as does one, they permit better balancing and the air is discharged in a constant stream with very little intermittancy. Intermittancy, of course, can be overcome with a single-cylinder compressor by the addition of a small storage tank and is of little moment anyway where the air is used for tire inflation alone. But where the air is used for cleaning purposes and no room can be found for a reservoir, the multi-cylinder pump has advantages over the single-cylinder pump.

In both the O. B. compressor and the Alding, the former being made by the Universal Mfg. Co., of Minneapolis, Minn., and the latter by the Cast Iron Brazing & Mfg. Co., of Manchester, N. H., the cylinders are opposed, thus providing for good balance and somewhat reducing the overall size of the machines. The O. B. pump delivers four cubic feet of free air a minute at 200 revolutions a minute and requires one

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horsepower to operate at that speed. The capacity of the Alding compressor is 200 pounds at 250 revolutions, two horsepower being required to drive it. Both are internally lubricated and are designed to operate for long periods without attention.

Accessibility of Valves Essential.

The Bury compressor, which is produced in several styles and sizes by the Bury compressor Co., of Erie, Pa., differs from any of the others in that its cylinders are vertical with the combined driving pulley and flywheel in the center. The size illustrated has cylinders measuring 3½ x 4 inches and delivers four cubic feet of free air per minute at 200 revolutions a minute; from three-quarters to one horsepower is required to drive it. The capacity of the pump is 200 pounds to the square inch.

The Au-To compressor, made by the Au-To Compressor Co., of Wilmington, Ohio, also has its cylinders vertically placed, though its construction is quite different from that of the Bury, as may be seen by reference to the accompanying illustrations. The Au-To has two flywheels, one at either end of the crankshaft, with the driving pulley in the center. The valves are contained in plates between the cylinders and the base plate and are easily accessible without the necessity for breaking air connections. Another distinctive feature of the Au-To is that each piston has an oil reservoir in it from which the cylinders and wristpins are lubricated. The air inlet is comparatively high up, so that there is no danger of dust and dirt from the floor being drawn into the cylinders and later forced into tires. The cylinders measure 2½ x 4 inches, and at 300 revolutions a minute the capacity is 6.8 cubic feet of free air a minute; two horsepower is required to operate the pump against maximum pressure of 200 pounds, less than half that being required, of course, when pumping 75 pound pressure, which is all that is needed for operation under ordinary conditions.

Quick Acting Twin Cylinder Pump.

In the Bastian compressor, which is produced by the General Utility Co., of Philadelphia, Pa., there is a still different arrangement of the two cylinders, one being placed horizontally directly over the other; the arrangement is best made plain with the aid of the accompanying illustration. One unusual feature of the pump is that all its moving parts, with the exception of the pistons, of course, are mounted in ball bearings, thus reducing friction to the minimum. The pump illustrated is known as style B and is driven direct by belting over the flywheel. In a larger size, styled model L, tight and loose pulleys are provided and there is a gear reduction between the driving pulley and the crankshaft which permits the driving pulley to operate at 1,600 revolutions a minute and cuts the compressor speed down to 350 revolutions. With the larger pump, it is pointed out by the manufacturers, a 300-gallon tank can be filled to 150 pounds pressure in a very short time and at a minimum expense for power.

Kellogg compressors are well known, of course, for the Kellogg Mfg. Co., of Rochester, N. Y., has been supplying small air pumps for standard equipment on automobiles so long that there are few persons who are not familiar with them. Incidentally, they are the only four-cylinder pumps on the market. Suffice it to say, therefore, that the outfit illustrated herewith consists essentially of the standard Kellogg four-cylinder air compressor arranged on a base with a clutch and a driving pulley for garage service. One of the latest improvements in the design of the pump itself is the incorporation of double check valves in the cylinder heads so that if the valve of one cylinder becomes clogged through any cause the other three cylinders will perform the work of all four.

Kellogg Four-Cylinder Outfit Light.

The whole Kellogg outfit undoubtedly is the lightest of all those described, and for this reason it has the advantage that it can be located on a bench or on a shelf out of the way, where it can be operated as needed by means of a long lever to the clutch control. Though the pump is air cooled, for heavy duty work, a slightly different style having a small water jacket at the tops of the cylinders is supplied; water circulation is effected on the thermo-siphonic system, and as lubrication is automatically carried on by the movements of the pistons, the pump requires the minimum of attention. By reason of the use of four cylinders the delivery of air is constant and a storage tank therefore is unnecessary, except for emergency use when driving power is not available.

What Constitutes "Innocent Sports"?

Whether automobiling is as innocent a sport as bicycling is a question at issue in an action instituted in the Supreme Court of Texas, sitting in Austin, wherein an order of mandamus is sought to compel Secretary of State John L. Wortham to grant papers of incorporation to the Dallas Automobile Club Building Association of Dallas under that section of the incorporation law which provides for the incorporation of "bicycle clubs and such other innocent sports"; the attorney general has held that "such other innocent sports" means those kindred to or affiliated with bicycling, his decision resulting from the questioning of the secretary of State's attitude in refusing a charter to the building association.

The charter for the building association was asked for by P. G. Keene, F. M. Smith and Samuel A. Leake, of Dallas, and while its members are mostly members of the Dallas Automobile Club, the building association is intended to be a separate organization. A site for a clubhouse for the automobile club has been secured and the incorporation of the building organization was sought as a preliminary to the construction of the building. The outcome of the litigation will affect a number of applications for charters, six baseball clubs now being held up.

Overman 10,000-Mile Tire Test Completed.

By way of demonstrating the ability of Overman cushion tires to withstand the abuse to which tires ordinarily are subjected by the average driver, the Overman Tire Co., of 250 West 54th street, New York City, submitted a set to be tested by the testing laboratory of the Automobile Club of America, and after 97 days' running two of them remained in good condition with 10,017 miles to their credit; two ran 7,275 and 8,995 miles, respectively, before they required displacement. The car on which the tires were tested was a National touring car weighing when empty 4,300 pounds, and the test was made over roads within a radius of 50 miles of New York City, the daily average mileage being 105.4.

The two tires with the greatest mileage to their credit were on the front wheels and were interchanged at the end of 7,572 miles. Of the two rear tires, the left was replaced at the end of 7,275 miles, the body being torn loose from the bead for about one-sixth of the circumference, and the right was replaced at the end of 8,995 miles, the body being torn from the bead for about one-fifth of the circumference. The total running time of the car was 495 hours and the average speed 20.2 miles an hour; on several occasions a speed of 50 miles an hour was attained. During the test, the left rear tire lost 13.3 pounds in weight, the right rear lost 17.1 pounds, the right front lost 13.4 pounds and the left front lost 15.9 pounds. The consumption of gasolene for the entire test was approximately 943 gallons, about 10.6 miles per gallon.

Habit that is Well Worth Acquiring.

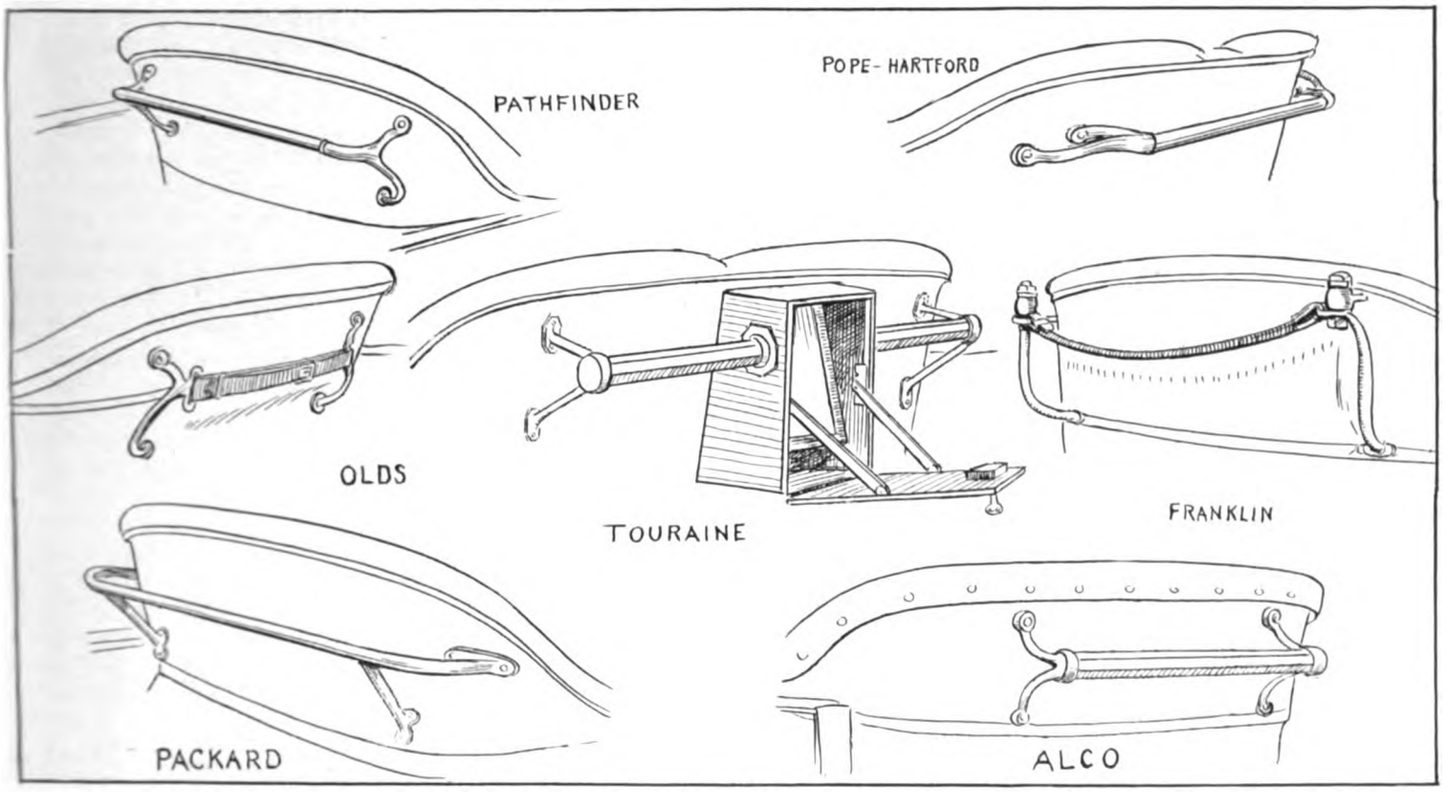
Despite the fact that a well-built electric lighting and starting system gives little trouble, it is important that the devices provided by the manufacturer to indicate derangement should be watched. It is almost as easy to form the habit of looking at indicators as it is to form the habit of ignoring them, and, to twist the old proverb, a glance in time saves dollars.

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RESTS FOR THE FEET AND RAILS FOR THE ROBES

Little Differences in Seldom Thought of Accessories That Add to Comfort or the Other Thing—Strong Points and Divergent Features of Rests and Rails Employed on American Cars—Minor Details That Appeal.

There must be, in the journeyings of all cars, times when the roads are rough and the going more or less bumpy. No machine escapes it, for even if smoothly-paved asphalt streets are adhered to, there are the



SEVEN TYPES OF ROBE RAILS SHOWING SIMPLE DESIGNS AND ONE THAT IS UNUSUAL

inevitable bad spots. And however well the car may be sprung, and however it may be provided with shock absorbers, buffers and the like, there must come times when the passengers in the tonneau are more or less jostled and when they feel that their comfort is preserved, even that they have been saved from being deposited on the floor, by the foot-rests which enable them to brace themselves against shocks. In fact, it is by no means difficult for any thinking person who has had a little experience in the rear seats of a car to figure out that on many occasions the tonneau would be a much more uncomfortable place than it is if the foot-rests were absent.

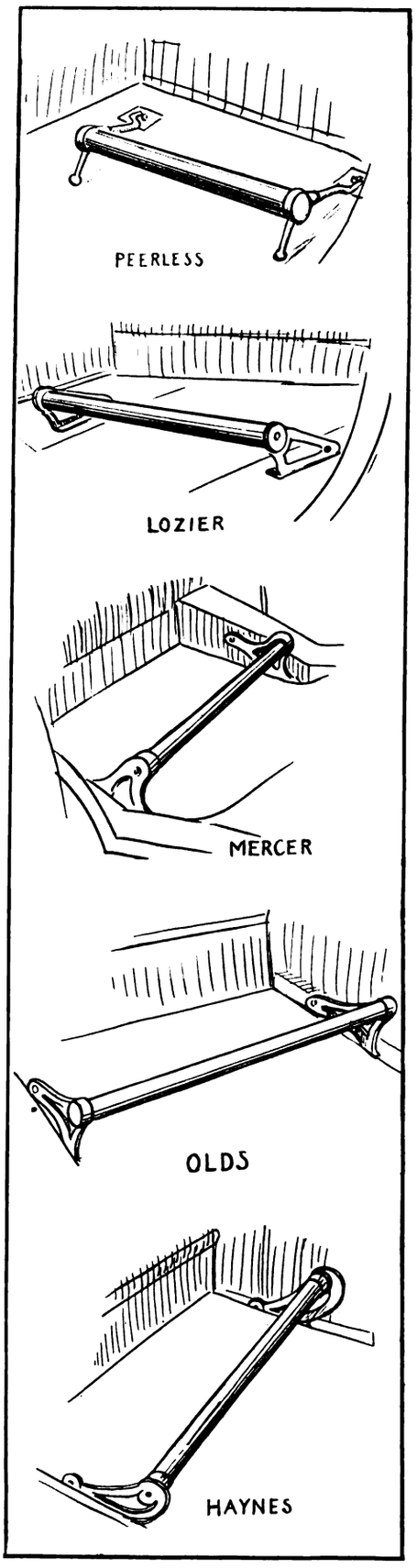
Robe-rails fall naturally in the same class with foot-rests—not because of the occasional tendency on the part of frivolous passengers to elevate their pedal extremities and rest them on the robe-rail, but because both are conveniences that, while simple and rarely given much though by those who use them, would be sadly missed if omitted. It is not putting it too strongly to say that frequently the foot-rests and robe-rails make all the difference between positive comfort and absolute unhappiness. It is only necessary to conjure up in one's imagination a car, without these humble accessories, loaded with passengers with their hands full of wraps endeavoring to stick to their seats while the machine bounds over a hummocky highway.

What Study of Problem Accomplishes.

While in the nature of things there is not much opportunity for variety in the arrangement of rails and rests, there is sufficient difference to indicate that most manufacturers have taken a real interest in the matter, and in some cases have gone to a good deal of trouble to produce fittings that are worth while. In the White touring car, for instance, full cognizance is taken of the fact that there is a lot of difference in the lengths of passengers' legs, and that a foot-rest that will make a tall person quite comfortable may be practically out of reach of a short passenger. Therefore, the rest is made adjustable as to its distance from the seat. Two brackets are secured to the tonneau floor, close to opposite sides; one is drilled with seven holes and the other has seven slots at exactly the same intervals. The supports at the ends of the rest are fitted with projections or pivots pointing inward, or away from the tonneau walls.

The process of putting the rest in position, supposing it to be detached, is to hook the projection on the perforated bracket side into the hole that is at the desired distance from the seat and then allow the opposite projection to drop into the corresponding slot on the other bracket, which cannot be done until the first is properly in place. The rest then falls forward and is supported at a convenient angle by legs which rest on the upper surfaces of the brackets. In swinging forward the pro-

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FIVE TYPES OF ROUND RESTS

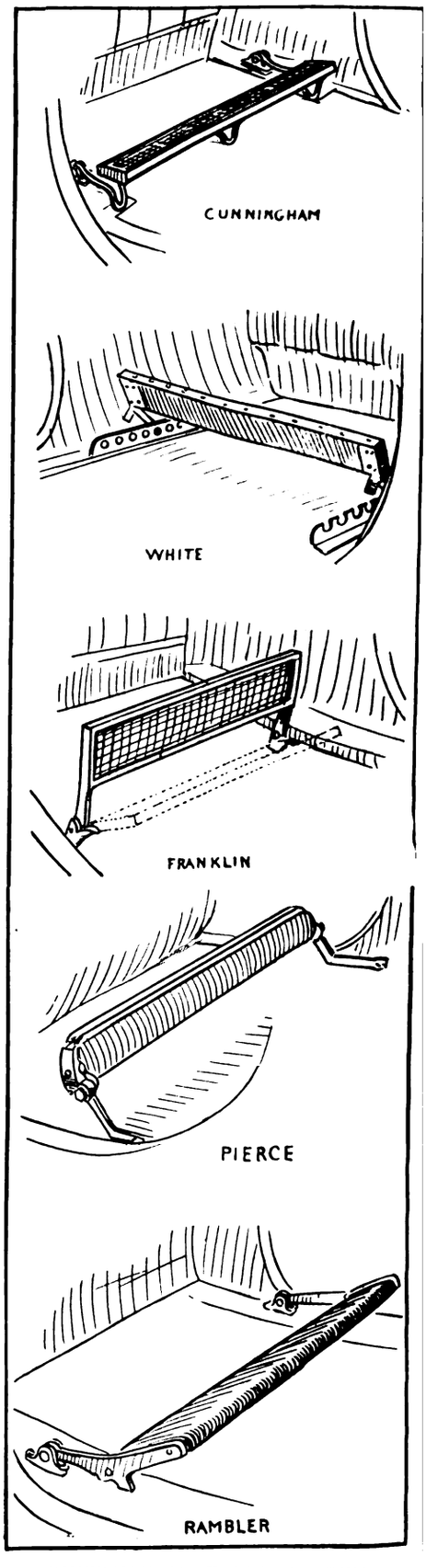
jection on the slotted bracket locks itself in place and the rest cannot be detached until it is swung into a nearly upright position. The foot-rest proper provides a broad, comfortable usrface for the feet to rest upon and adds materially to the passengers' ease.

The same ample "bearing surface" is provided in the foot-rests found in the Franklin, Pierce, Cunningham and Rambler cars, though the details differ in all these cases, and the adjusting feature is absent. The Pierce foot-rest is supported by swinging brackets bent upward and resting their angles on the floor, so that the rest-bar is held up at a comfortable height; the bar itself is mounted on pivots at each end, so that it conforms automatically to the position of the foot and by giving a chance for flexing the ankles tends to eliminate stiffness and discomfort on long rides. In the Franklin the wide rest is carried rigidly on swinging brackets that are held at the proper angle by downwardly-projecting lugs close to the swivel joints. Like practically all foot-rests, the Franklin device folds flat on the floor when tipped backward as far as it will go. The Rambler rest is of unusual width, giving an easy resting-place for the feet, and is padded. Short legs at mid-length of the brackets hold it up at the proper angle. Three legs are fitted to the Cunningham foot-rest, the two at the ends being supplemented by a third at the middle of the bar to afford ample support against the thrust of a heavy passenger. A glance at some of the disabled foot-rests in cars that have been in use for some time will indicate the importance of this provision.

Varieties of the Tubular Type.

By far the greater number of foot-rests, on cars of all sorts, sizes and types, are of metal rods or tubes carried by the usual swinging side brackets with means for holding them at a fixed height from the floor. The Peerless well exemplifies this type. The cross-bar is short and stout and its two straight brackets are let into low-placed joints on the floor, while two legs, one at either end of the bar, give the desired clearance. In the Lozier the design is very similar, the only real difference being that the supporting legs are connected with the bracket bars in such a way as to make the brackets a pair of triangles; this form, incidentally, affords a long supporting base for the brackets.

The same principle is embodied in the Olds foot-rest, the brackets being substantially of triangular form; the rest itself is longer, however, extending almost to the walls of the tonneau. The Haynes also has a long foot-bar, but the bracket is given a curved form which is particularly noticeable because it lies snugly down when the rest is folded back on the car floor. The Mercer touring car has a very substantial foot-rest that is in a fixed position, rigidly supported on triangular brackets screwed to the sills at either side of the tonneau floor.



DIVERSITY IN FOLDING RESTS

The robe-rail exists for the purpose of relieving passengers of the necessity for

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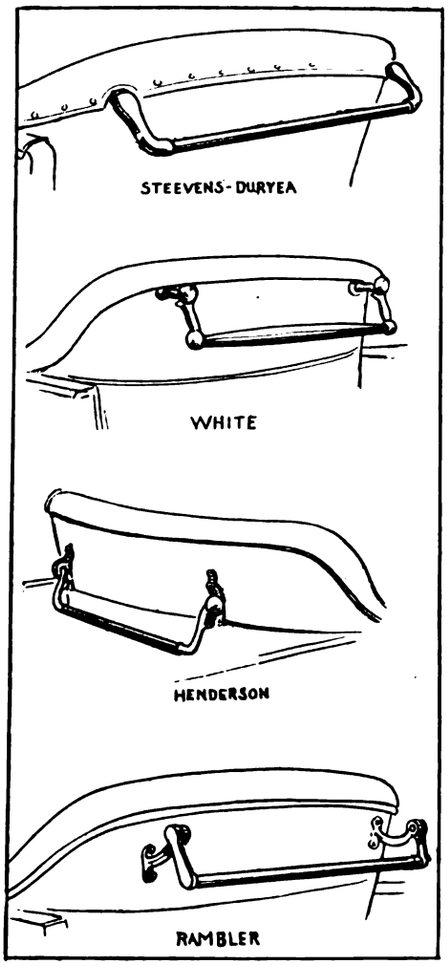
carrying wraps when they do not want them, of keeping robes off the floor when they are not in use and of accommodating anything that will consent to be accommodated, from an umbrella to a small parcel that can be jammed behind the rail. A virtue that every robe-rail should possess is unobtrusiveness when not in use; further, there should be no angles to catch and tear clothing. All these requirements seem to be well met by the various forms of fixed rails that are found in many makes of cars. A glance at the illustration of the Packard robe-rail shows that the simple form is the result of no little thought, for the long rod provides plenty of space, the short lower brackets give strength to support the weight of a clutching passenger, to say nothing of the legitimate load of robes and the like, while there is not an angle that gives an opportunity to catch and tear holes in people's clothes and fray their tempers. Further, the extended ends form excellent grips to be used when climbing into the tonneau—an employment which further justifies the substantial fastening methods.

Contrasts in Robe Rails.

The same absence of angles and the same extended ends to be used as hand-holds are found in the rail of the Pope-Hartford touring car, though the ends curve differently and the supporting brackets are horizontal instead of being carried downward at an angle. The Alco also goes in for simplicity, providing a rail that is supported at each end by A-shaped brackets. It is a handsome rail, let it be said, the cross-bar being of substantial proportions and made of octagonal brass tubing, highly polished.

It is impossible to refer to the robe rail of the Touraine "six" without referring also to the neat little cabinet which divides it into two sections, as the accompanying illustration shows. The rail itself is of heavy octagonal tubing with A-shaped end supports, but instead of being continuous from side to side of the car, as most rails are, there is a polished mahogany compartment in the middle of the back and the front seat, with a swinging door which drops like the front of a kodak and, supported by metal straps, forms a little table—obviously a toilet table for no other reason than that there is, in the cabinet, a mirror hung from the top and adjustable to any convenient angle. There is plenty of space inside the box for the various things that might be assumed to go along with the mirror, and a lock on the door secures the contents.

A robe-rail that is found in a number of cars, either of exactly the shape shown in the accompanying illustration or closely approximating that shape, is exemplified in the device in the Pathfinder touring car. While it is of a simple type, it is well designed in that its "angles are all curves," to use a Hibernianism, and it offers no garment-tearing projections. There are several slight variations in the finish of this type of robe-rail in different cars; for instance, the brackets may be enameled black, or some other color to match the car, and the bar covered with leather or fabric, or plated; or the whole affair may be plated, or finished



VARIETY IN ROBE RAIL CONSTRUCTION

in polished brass, and so on. The most popular finish appears to be a very quiet one, with black enameled brackets and a black leather covering for the bar.

In the Hinged Class.

There is a distinct class of robe-rails in which the brackets are hinged, so that the bar drops against the back of the front seat when it is bearing no burden, and when carrying a robe or wrap drops as far as the thickness of the stuff permits, and so economizes space. A simple, substantial rail of this class is that in the Stevens-Duryea car, which is smooth and cornerless and neat in appearance. The bulbous ends of the brackets are slotted to receive the plates which are attached to the back of the front seat and form the stationary halves of the hinges. The Henderson drop-rail has a ball-hinge effect and well-rounded corners and, perhaps, a little more depth when extended than most rails. The White rail also has the ball effect at the hinged part, but the outer corners, instead of being curved, are tipped by large, polished balls that answer the purpose of preventing things from catching and at the same time add a touch of ornateness. The cross-bar is built on scientific principles, being thicker in the middle than at the ends, giving considerable strength against unusual stresses.

Straps for Cross-Bars.

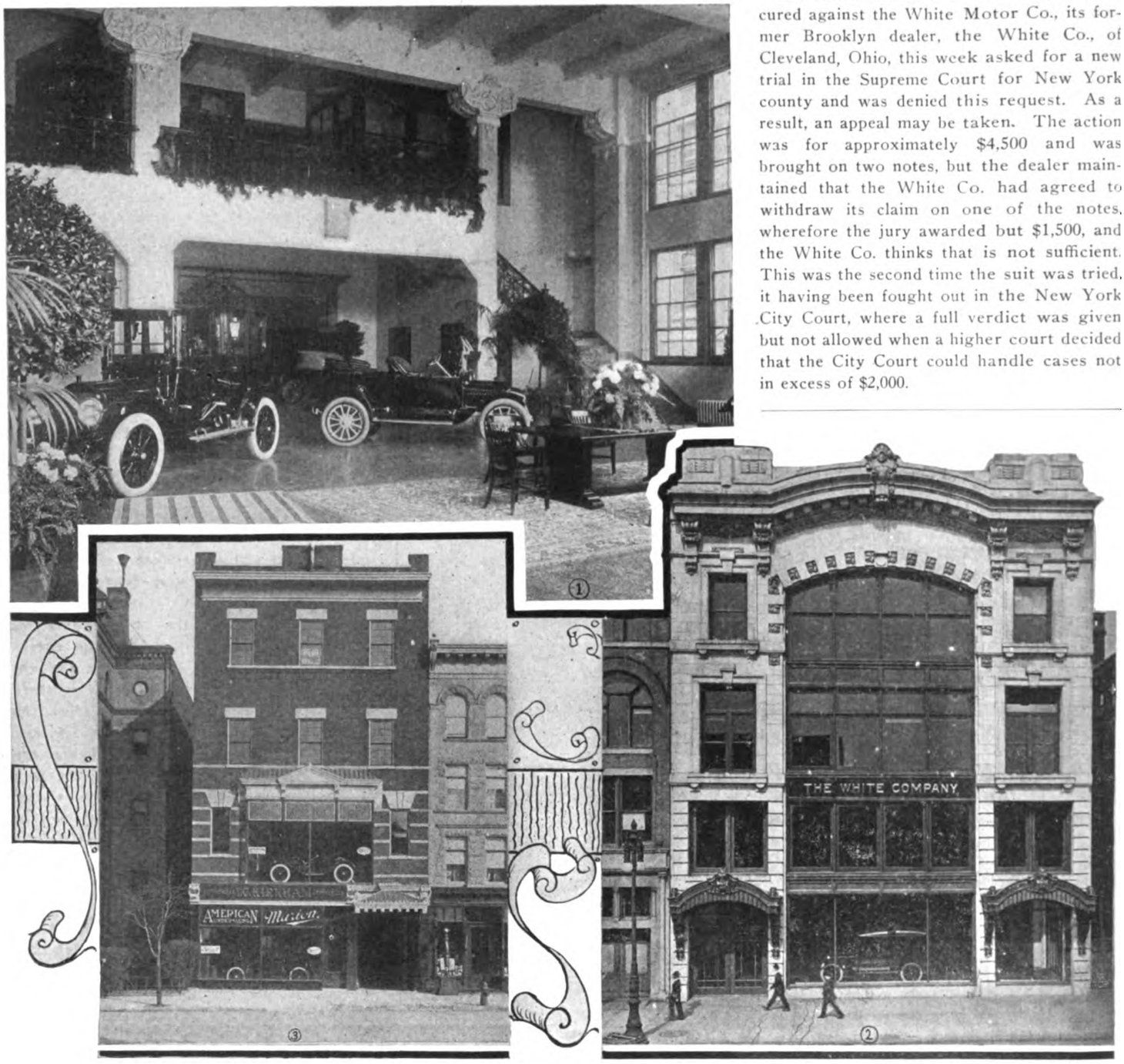
The hinged robe rail of the Rambler car is carried on brackets that extend rather more than the usual distance from the point of attachment, so that, with the brackets on the rail itself, there is an unusual depth for the accommodation of heavy robes or coats. When the rail is not in use it can be allowed to drop and hang vertically, or can be folded back.

A little separate class is formed by the robe rails of the Franklin and the Olds cars, in which the usual rigid cross-bar is missing, a stout leather strap taking its place. While in all important respects the two rails—if leather straps can be termed rails—are alike, in that the strap principle is used in both, while the end brackets are carried well downward in graceful curves to form hand-holds to facilitate the entrance of passengers to the tonneau, there are detail differences. In the Olds the strap is a conventional strap—that is to say, it is of flat leather, doubled, being run through slots in the brackets, carried back upon itself and buckled in the ordinary way, permitting the strap to be lengthened or shortened if required. In the Franklin the strap is more in the nature of a smooth, round rope of leather hooked into the end brackets. As the illustrations show, the brackets themselves are, as might be expected, different in their curves, though they serve the same purpose.

It goes without saying that there are numerous other patterns of rests for the feet and rails for robes and wraps; but practically all resemble more or less strongly those described. Though there is not a great deal of room for variety, there is plenty of opportunity to display forethought, on the part of designers, that eliminates the annoyance caused by the faulty design of a robe rail that insistently catches the clothes of the entering passenger, or of the foot-rest that is placed at an uncomfortable angle, or at the wrong distance from the seat, or that bends in the middle when the passenger of more than usual avoirdupois locates himself in the middle of the seat, plants his feet in the center of the bar and puts all his weight on it when he resists a forward pitch.

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TWO AUTOMOBILE SALESROOMS OUT OF THE USUAL RUN



1 AND 2—INTERIOR AND EXTERIOR VIEWS OF THE WHITE COMPANY'S NEW SALESROOMS IN PHILADELPHIA. 3—AMERICAN-MARION SALESROOM IN BROOKLYN, N. Y.

White and Its Dealer Still at Odds.

Not satisfied with a verdict of $1,500 secured against the White Motor Co., its former Brooklyn dealer, the White Co., of Cleveland, Ohio, this week asked for a new trial in the Supreme Court for New York county and was denied this request. As a result, an appeal may be taken. The action was for approximately $4,500 and was brought on two notes, but the dealer maintained that the White Co. had agreed to withdraw its claim on one of the notes, wherefore the jury awarded but $1,500, and the White Co. thinks that is not sufficient. This was the second time the suit was tried, it having been fought out in the New York City Court, where a full verdict was given but not allowed when a higher court decided that the City Court could handle cases not in excess of $2,000.

IN THE RETAIL WORLD.

(Continued from page 12.)

burg, W. Va. He has purchased a site, 103 x 206 feet, at East Burke and South Spring streets, in the latter town, and will erect a brick garage and salesrooms. The site cost $7,500.

Authority has been granted to Herman Ablers, of Brooklyn, N. Y., to erect a garage at Lewis and Gates avenues. The estimated cost is $9,000.

W. C. Collins, formerly of Buffalo, Ia., has entered the trade in Bettendorf, in the same State. He is trading under the style Bettendorf Auto Co. and deals in new and used cars.

The George E. Goll Co., of Champaign, Ill., has taken possession of new salesrooms on North Hickory street. C. W. Wiggins is about to locate in an adjacent building. He is Cadillac dealer.

Stephen B. Jacobs, proprietor of the Dedham (Mass.) Auto Station, has secured a site at 362-364 Washington street and is about to erect a new fireproof garage, 54 x 120 feet. He handles Studebaker cars, Diamond, Goodrich and G & J Tires, Panhard oils and Prest-O-Lite tanks.

Lovell Marks has sold his interest in the Marks & Mathews Garage in Bardstown, Ky., to James Mathews, who, in turn, has disposed of a half-interest. The firm style now is Mathews, Spalding & Hurst. A new garage is to be erected on the southwest corner of the Public square.

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"BOOST INDIANA" TOURISTS READY TO START BOOSTING

22 Cars to Start July 1 on 3,550-Mile Trans-Continental Trip—Hendersons to Use Kerosene—Entries and Itinerary.

Bearing a large American flag presented by Governor Ralston, and letters from him to the executive of every commonwealth in which they will stop, the first of the 22 cars that will carry the party of tourists who, under the auspices of the Indianapolis Automobile Manufacturers' Association, will "boost" Indiana all the way to the Pacific Coast, will head west and roll away from Indianapolis on Tuesday morning, July 1st; following it there will be at least 21 cars, and there may be more, but before they all get away there is to be a parade and a formal review by the Governor.

With the practical completion of the last detail of the tour, enthusiasm for it is high; it is so high, in fact, that it has been found necessary to provide a special Pullman car to carry those who would see the wonders of the West but who can find no place in the cars of the tourists. The car will be hitched to fast railroad trains along the route and will meet the tourists at all the cities where night stops have been arranged. It will leave Indianapolis on July 4th, three days after the start of the tour, and will pick up the tourists the next day at Kansas City; thence it will keep in close touch with the motorists.

During the 26 days the tourists will be on the road—no travelling will be done on Sundays—they will cover some 3,548.1 miles, the average daily mileage figuring out at 126.8. From Indianapolis, the trail leads almost directly west over some of the finest roads in eight States, with stops in the following cities, where the tourists will sleep and get into action their "boosting" propaganda: Terre Haute, St. Louis, Kansas City, Fort Riley, Colorado Springs, Denver, Grand Canyon, Salt Lake City, Reno, Tonopah, Goldfield, Carson City, Sacramento, San Luis, Santa Barbara, San Francisco and Los Angeles, which is the official end of the tour and which will be reached August 2; the return date has been set for Aug. 6th.

The complete entry list to date is as follows, seven cars being added during the past three weeks: American Motors Co., American; D. S. Menasco, American; Henderson Motor Car Co., Henderson; R. P. Henderson, Henderson; Stutz Motor Car Co., Stutz; Harry Stutz, Stutz; Marion Motor Car Co., Marion; J. I. Handley, Marion; Premier Motor Mfg. Co., Premier; H. O. Smith, Premier; Haynes Motor Car Co., Haynes; Motor Car Mfg. Co., Pathfinder; McFarlan Motor Car Co., McFarlan; Carl G. Fisher, Marmon; Apperson Bros. Automobile Co., two Appersons; Geo. H. Strout, Haynes; Empire Automobile Co., Empire; Pilot Motor Car Co., Pilot; G & J Tire Co., Premier commercial.

Giving plain indication of the fact that the run is a "boosting" run pure and simple and that it is not a contest of any kind, all of the cars will be similarly marked to that effect. Their numbers will be placed on their radiators; on their hoods "Indiana to Pacific" will be painted; on the front doors, the name of the car and "Made in Indiana" will be lettered; and on the back of the tonneau "Made in Indiana" and the name of the car will appear. Carrying out the same idea in the uniformity of marking, all of the passengers will be similarly "uniformed" in khaki suits; hats, however, will be different, and it is likely that each party of "boosters" will select some distinctive design of its own, as was the case in last year's Four-States tour.

Though most of the cars will carry extra equipment in the way of a spare can of oil and a camping outfit, it is unlikely that the camping paraphernalia ever will be used, for the daily runs have been arranged so as to bring the tourists each night to cities where there are hotel accommodations. With two exceptions, all of the cars will make the run on gasolene, the exceptions being the two Henderson cars dirven by R. P. Henderson and Ray Harroun; both will be equipped with Harroun's new kerosene carburetter and will use nothing but the heavier grade fuel on the run.

Plans Chicago-Boston-Chicago Tour.

Unless something goes amiss, the Chicago Automobile Club, on July 17th, will start an unusually long tour for its members and for any one else who may care to "join in"; it will take the motorists from the Windy City to Boston, Mass., and return, the total mileage being, approximately, 2,500. Chairman Frank X. Mudd, of the runs and tours committee of the C. A. C., has the project in hand, and the route selected is the same as one over which he travelled last year, and approximately the same as that selected for the C. A. C. reliability tour to Boston, which is scheduled for the fall. According to the plans, the itinerary of the tour is as follows: Chicago, South Bend, Ypsilanti, Detroit, Buffalo, Auburn, Utica, Albany, Worcester, Boston, New London, New Haven, New York City, Philadelphia, Hagerstown, Pittsburgh, Chicago. Two days are to be spent in New York City, and possibly three, to permit a side trip to Atlantic City. The tourists will reach Chicago on the return trip on August 4th.

FAST TIME BY HEISEY IN HILL CLIMB IN CINCINNATI

Beaten Only with Much Larger Car, He Accounts for Three Events—Touring Car Race Goes to Baesthlen.

Harold Heisey, at the wheel of a Buick, was easily the bright particular star of the Cincinnati Automobile Dealers' Association hill climb, which was held on Saturday, 21st inst., on the Stanley avenue hill in the east end of the Ohio city. Heisey accounted for both the 230- and the 300-inch events and, in addition, beat John Rainey, who piloted an Ohio to victory in two other events, in a special match race which really was the feature of the day. Heisey's best time, made with a car that belongs in the 161-230-inch class, was beaten only by J. D. Gagnon in a 600-inch Fiat and Rainey in Bob Burman's big Ohio, who in the free-for-all made the ascent in 27 and 27⅗ seconds, respectively. What, however, may be termed the "most practical" event—for cars in touring trim carrying four passengers—went to A. Baesthlen (Marmon) in 43⅕ seconds. The slant on which the climb was held is 2,340 feet in length and has an average grade of 8.5 per ment. The weather throughout the day was perfect and a great crowd lined both sides of the course; there were no accidents of any kind to mar the occasion. The summary:

Class C, under 161 cubic inches—Walkover for H. E. McCord (Empire); time, 55 seconds. Only starter.

Class C, 161-230 cubic inches—Won by H. Heisey (Buick); time, 0:33⅕. Second, J. Rothbert (R. C. H.); time, 0:39.

Class C, 231-300 cubic inches—Won by John Rainey (Ohio); time, first trial, 0:30⅖; second trial, 0:31⅕.

Class C, 301-450 cubic inches—Won by H. Heisey (Buick); time, 0:29⅘. Second, Wm. Fritsch (Cino); time, 0:32. Third, V. S. Starkey (Speedwell); time, 0:55.

Class C, 450-600 cubic inches—Won by J. D. Gagnon (Fiat); time, first trial, 0:29; second trial, 0:28.

Free-for-all in touring trim, carrying four passengers—Won by Albert Baesthlen (Marmon); time, 0:43⅘. Second, C. B. Kruse (Marmon); time, 0:48⅗.

Class D, free-for-all—Tie between John Rainey (Ohio) and J. D. Gagnon (Fiat); time, 0:27⅘. Third, S. Peyton (Cino); time, 0:30⅕. In run-off Gagnon won in 0:27. Rainey's time, 0:27⅗.

Class E, match race—Won by H. Heisey (Buick); time, 0:29⅕. Second, John Rainey (Ohio); time, 0:29⅗.

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1,040,349. Ignition System. Charles F. Kettering, Dayton, Ohio, assignor to the Dayton Engineering Laboratories Co., a corporation of Ohio. Filed June 3, 1910. Serial No. 564,737. (Timer and distributer with means for grounding secondary current.) 10 claims.

1,040,414. Carburetter. George P. Rettig, Richmond, Ind. Filed Sept. 7, 1910. Serial No. 580,921. (Carburetter with multiple mixing chambers.) 1 claim.

1,040,430. Regulating Device for Hydraulic Transmission. Eugene Schneider, Le Creuzot, France. Filed Nov. 29, 1911. Serial No. 663,034. (Double cam and lever control for hydraulic transmission.) 5 claims.

1,040,431. Cushion Tire. Paul Schneider, Webster Groves, Mo. Filed Feb. 12, 1912. Serial No. 677,183. (Endless helical spring tire with internal flat band to support the coils.) 2 claims.

1,040,432. Resilient Tire. Charles T. Schoen, Media, Pa. Filed June 29, 1911. Serial No. 636,083. (Rubber tire with radial pockets containing coiled springs.) 4 claims.

1,040,443. Means for Transmitting Power. Alfred J. Signor, Elkhart, Ind. Filed Feb. 10, 1912. Serial No. 676,910. (Double bevel gear rear axle drive.) 2 claims.

1,040,471. Vehicle Wheel Tire. Charles Van Smith, Kansas City, Mo. Filed Sept. 3, 1910. Serial No. 580,445. (Tire of sections of coiled springs, and connecting means.) 1 claim.

1,040,472. Gas Engine. Charles T. Wade, Annapolis, Md. Filed Sept. 1, 1910. Serial No. 580,073. (Motor with two-diameter piston and gas-passage through piston rod.) 3 claims.

1,040,479. Controlling Mechanism. Alexander Winton, Cleveland, Ohio. Filed Dec. 5, 1904. Serial No. 235,487. (Spark and throttle control with spiral cam mechanism.) 1 claim.

1,040,496. System of Electrical Distribution. Wm. L. Bliss, New York, N. Y., assignor, by mesne assignments, to the United States Light & Heating Co., New York, N. Y., a corporation of Maine. Filed Aug. 4, 1904. Serial No. 219,461. (Current control for electric lighting and starting system.) 23 claims.

1,040,508. Internal-Combustion Engine. William C. Carter, St. Louis, Mo., assignor of one-half to Charles Otto Baxter, St. Louis, Mo. Filed March 20, 1911. Serial No. 615,505. (Valve cage with expansible packing.) 6 claims.

1,040,511.1 Automobile Wheel. Henry B. Coats, Veedersburg, Ind. Filed Aug. 29, 1911. Serial No. 646,692. (Wheel with a plurality of small pneumatic-tired wheels between hub and rim.) 2 claims.

1,040,515. Brake for Vehicles. Wm. C. Cooper, Springfield, Ill. Filed July 17, 1911. Serial No. 638,953. (Means for actuating internal and external brakes simultaneously.) 2 claims.

1,040,518. Ignition Apparatus for Internal-Combustion Engines. Mark B. Crist, Pittsburgh, and Merritt R. Wells, Wilkinsburg, Pa., assignors, by mesne assignments, to the Colonial Trust Co., trustee, Pittsburgh, Pa., a corporation of Pennsylvania. Filed Feb. 15, 1906. Serial No. 301,224. (Timer with mercury circuit breaker.) 2 claims.

1,040,528. Carburetter. Herman Dock, Westerly, R. I., assignor, by mesne assignments, to Alfred A. Whitman, New York, N. Y. Filed Nov. 24, 1908, Serial No. 464,246. Renewed June 8, 19111. Serial No. 632,021. (Carburetter with spray-nozzle opening regulated by air-valve opening.) 11 claims.

1,040,581. Tire for Automobiles, Vehicles, or the Like. Addison W. Rowe, Philadelphia, Pa. Filed Feb. 8, 1911. Serial No. 607,289. (Double-chambered cushion tire.) 3 claims.

1,040,586. Automatic Electric Speed-Regulator. Metellus D. Selden and Richmond L. Graves, Memphis, Tenn. Filed Feb. 28, 1911. Serial No. 611,,422. (Speed indicator with visible and audible signals, electrically operated.) 1 claim.

1,040,598. Safety Starting-Crank for Explosive-Engines. Joseph T. Weinzierl and Julius Sturtevant, New Kensington, Pa. Filed Dec. 19, 1910. Serial No. 598,058. (Anti-kick crank.) 3 claims.

1,040,599. Resilient Hub for Wheels. Charles A. White and Frank McLaughlin, London, Ontario, Canada. Filed March 9, 1912. Serial No. 682,694. (Spring-cushioned hub and driving means.) 2 claims.

1,040,604. Power-Transmission Gearing. Vincent G. Apple, Dayton, Ohio. Filed June 15, 1911. Serial No. 633,234. (Automatic gear-engaging means for lighting dynamos and starting motors.) 5 claims.

1,040,612. Valve for Internal-Combustion Engines. Ernest Windsor Bowen, London, England. Filed Nov. 25, 1911. Serial No. 662,371. (Sleeve valve in cylinder head.) 2 claims.

1,040,619. Carburetter. William C. Carter, St. Louis, Mo. Filed Nov. 8, 1909. Serial No. 526,823. (Multiple jet carburetter.) 8 claims.

1,040,649. Transmission-Gearing. John Demmler, Grove City, Pa. Filed May 15, 1912. Serial No. 697,382. (Combination of sliding gears and clutch.) 3 claims.

1,040,650. Traction-Engine. Richard C. De Witt, Sutter, Cal. Filed Nov. 15, 1911. Serial No. 660,391. (Transmission mechanism for traction engines.) 1 claim.

1,040,666. Fuel-Pump for Combustion-Engines of the Injection Type. Jacob Gunther, Bergisch Gladbach, near Cologne, Germany. Filed Jan. 21, 1911. Serial No. 603,845. (Cam-operated fuel pump.) 8 claims.

1,040,694. Spring Wheel. Joseph Kohler, Chicago, Ill., assignor of one-half to Kittie Collins, Chicago, Ill. Filed Aug. 28, 1911. Serial No. 646,500. (Resilient wheel with radial helical springs.) 2 claims.

1,040,697. Automobile. Alvaro S. Krotz, Chicago, Ill., assignor to Sears, Roebuck & Co., Chicago, Ill., a corporation of New York. Filed Dec. 16, 1908. Serial No. 467,866. (Stop to limit elliptic spring movement.) 2 claims.

1,040,709. Cooling Means for Gasolene Engines. Thomas J. Loftus, Castella, Cal., assignor of one-half to Harmon Bell, Oakland, Cal. Filed May 9,9 1911. Serial No. 625,984. (Device for injecting water with gas charge.) 2 claims.

1,040,712. Valve for Gas-Lighting Systems for Automobiles. Albert Lutenegger, Sacramento, Cal. Filed Dec. 28, 1910. Serial No. 599,682. (Gas-tight needle valve.) 3 claims.

1,040,716. Rotary Motor. Henry Manrodt, Brooklyn, N. Y. Filed April 1, 1911. Serial No. 618,286. (Revolving cylinder motor.) 11 claims.

1,040,755. Spring Wheel. Peter G. Rapp and Peter H. King, Chicago, Ill. Filed May 15, 1911. Serial No. 627,258. (Resilient wheel with semi-elliptic springs between inner and outer rims.) 7 claims.

1,040,766. Compound Valve and Starter. Charles C. Roth, Indianapolis, Ind. Filed May 22, 1911. Serial No. 628,839. (Air valve for air-starting motors.) 4 claims.

1,040,853. Mixer for Gaseous Fuel. Wilbur W. Bergold, Canton, Ohio, assignor of one-half to J. M. Bergold, Canton, Ohio. Filed Jan. 5, 1912. Serial No. 669,530. (Auxiliary mixer for carburetters.) 5 claims.

1,040,865. Non-Skidding Tire. John G. Boss, Denver, Col. Filed Sept. 1, 1910. Serial No. 580,097. (Ribbed tire tread.) 1 claim.

1,040,884. Automatic Spark Advancer. Clyde C. Charles, Moisington, Kan. Filed Feb. 27, 1912. Serial No. 680,295. (Automatic ignition timing governor.) 6 claims.

1,040,917. Rebound Check. Walter Arthur Finley, Fairmont, W. Va., assignor of one-fourth to Frederic Heimick, Fairmont, W. Va. Filed Dec. 14, 1911. Serial No. 665,600. (Rebound check with adjustable friction drum and band.) 18 claims.

1,040,920. Tire. Henry G. Fiske, New York, N. Y., assignor, by mesne assignments, to the Columbia Motor Car Co., Hartford, Conn., a corporation of Connecticut. Filed July 1, 1899. Serial No. 722,526. (Thick-tread cushion tire with internal cushion to support tread when tire is deflated.) 8 claims.

1,040,925. Wheel. Franklin A. Frommann, Detroit, Mich. Filed Sept. 30, 1911. Serial No. 652,144. (Resilient wheel with independently movable, spring-supported segmental sections.) 9 claims.

1,040,945. Spring Wheel. John W. Heagney, Melrose, Iowa. Filed Nov. 25, 1911. Serial No. 662,381. (Spring tire with tread of linked metal members.) 2 claims.

1,040,980. Automobile-Pump. Edwin H. Haney, Stockton, Cal., assignor of one-fourth to Andrew McCormick and Harry Jacoby, Stockton, Cal. Filed Jan. 13, 1912. Serial No. 671,017. (Oscillating-cylinder air pump). 2 claims.

1,040,9996. Gas Engine Priming Cup. Charles W. Beck, Rockville Center, N. Y. Filed Jan. 9, 1911. Serial No. 601,501. Renewed March 7, 1912. Serial No. 682,090. (Priming cup with closures for both filling and cylinder ports.) 9 claims.

1,041,093. Means for Adjusting Clutch Inserts. Frank Jungjohann, Davenport, Iowa. Filed Jan. 31, 1912. Serial No. 674,596. (Set-screws for pushing clutch inserts outward when worn.) 13 claims.

1,041,097. Combined Vehicle Hub and Shock Absorber. Charles L. Kennedy, Winnipeg, Canada. Filed March 27, 1912. Serial No. 686,600. (Enlarged hub containing spring shock absorbers.) 2 claims.

1,041,0999. Carburetter. James Kerns, Wayne, Mich., assignor, by direct and mesne assignments, of three-fourths to John Howse and one-fourth to Nettie Talmon, Wayne, Mich. Filed Jan. 9, 1911. Sereial No. 601,626. (Carburetter with drum-shaped mixing chamber and revolubly adjustable gasolene passage carrying spray nozzle.) 1 claim.

1,041,132. Power Transmission Mechanism. Charles David McClintock, Oakland, Cal., assignor of fifty-eight one-hundredths to Saul Cornfield, Oakland, Cal. Filed Jan. 15, 1912. Serial No. 671,205. (Piston-actuated clutch and controlling means.) 10 claims.

1,041,139. Anti-Skid Device for Block Tires. Stephen S. Miller, Akron, Ohio, assignor to Consolidated Rubber Tire Co., New York, N. Y., a corporation of New Jersey. Filed Sept. 15, 1910. Serial No. 582,235. (Cross chains and adjustments for block tires.) 2 claims.

1,041,154. Two-Cycle Explosion-Motor. Leon Palous, Berlin, Germany. Filed Dec. 26, 1911. Serial No. 667,799. (Fuel and air valve arrangement for two-cycle motor.) 3 claims.

1,041,162. Internal-Combustion Engine. Balfour Read, Bedford, England. Filed Aug. 10, 1910. Serial No. 576,435. (Motor with pumping chamber in tendem with explosion chamber and the pistons connected by hollow sleeves containing ports.) 8 claims.

1,041,182. Cushion-Tired Wheel. William D. Simpson, Columbia, S. C. Filed May 4, 1912. Serial No. 695,061. (Wheel with pneumatic cushions between inner and outer rims.) 4 claims.

1,041,191. Traction Engine for Cultivators. Herbert P. Suhl, Fortuna, Mo. Filed Oct. 4, 1911. Serial No. 652,724. (Self-contained detachable two-wheeled farm tractor.) 4 claims.

1,041,244. Resilient Wheel. Charles J. Craig, Lathrop, Mo. Filed Jan. 7, 1911. Serial No. 601,337. (Wheel with C-springs between hub and rim, and with cross-rods across rim to prevent lateral movement.) 1 claim.

1,041,303. Internal-Combustion Engine. Hams Knudsen, London, England. Filed Feb. 27, 1911. Serial No. 611,447. (Concentric valves in cylainder head with overhead gear.) 6 claims.

1,041,319. Lumber-Truck. John A. McGarry, Chicago, Ill. Filed Jan. 11, 1911. Serial No. 601,955. (Roller mechanism for shifting load on truck platform.) 1 claim.

1,041,336. Pneumatic-Pressure Gauge. Ole Olsen, Oakland, Cal. Filed June 1, 1911. Serial No. 630,608. (Automatic tire gauge with air trapping valve.) 2 claims.

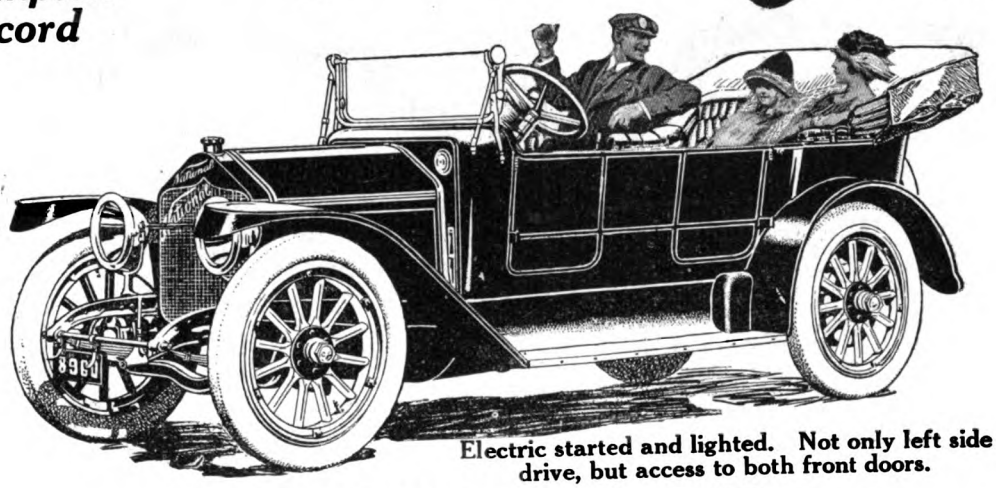
1,041,660. Tire Tool. Axel A. Nelson, Washington, D. C. Filed June 28, 1911. Serial No. 636,338. (Lever tool for removing tire casings.) 1 claim.

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Holds World's Stock Champion Record

National

Holds world's record for fastest 500 miles in competition



Electric started and lighted. Not only left side drive, but access to both front doors.

Five Models, $2750 to $3400

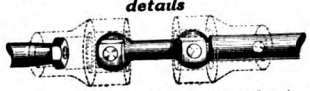
The National is a good dealer's proposition

It does mean something to you to be the dealer for the *National*—an asset, a reputation builder and a certainty of profitable business—and now is your chance to get it.

Identify yourself *now* with the car of *now* and the *future*—for the *National*, "*the $5,000 car with the $3,000 price*," is destined to continue to be the most popular high-grade car.

When you consider the selling advantage of the many superior points about the *National*, the profit that remains profit, the good will the *National* brings you with the certainty of an increasingly profitable business—you will see the opportunity that is now offered you.

One of many perfected little details



Double Universal Joint for driving magneto, taking all strain from bearings. Large wearing surfaces assure minimum wear and lost motion. Magneto is easily removed. This is but one of the many details of superior *National* construction which mean much to *National* owners and dealers.

Visit our factory

Come in to the factory and see for yourself the many advantages the *National* offers you. It will be well worth your time, even if you do not take the agency now. If you cannot come now write today for *National* Catalog and our dealer's proposition.

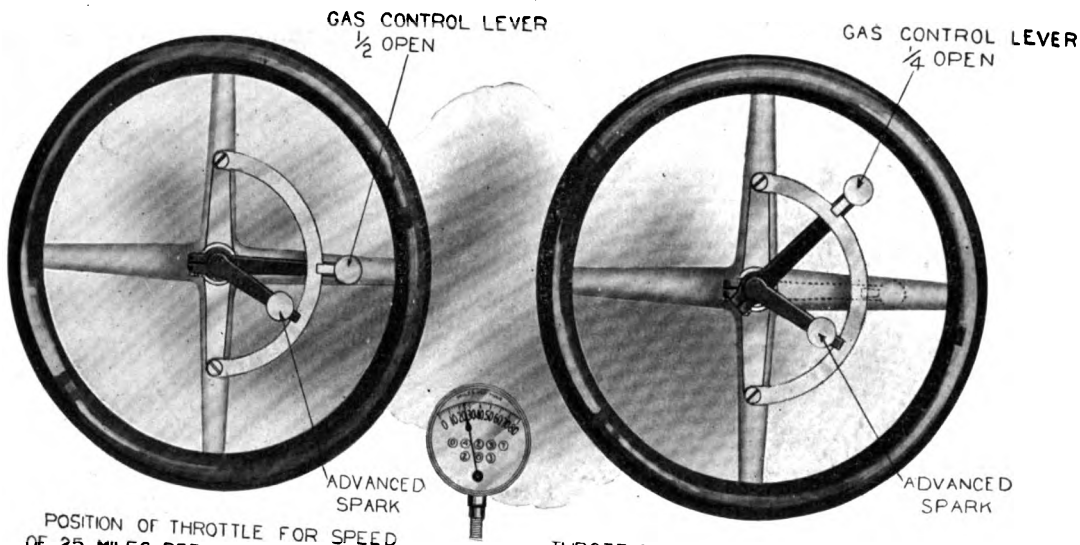
- Long stroke (4 7-8 x 6), flexible and noiseless motor with enclosed valves.
- Left side drive, center control.
- Gray & Davis electric starter.
- Gray & Davis dynamo electric lighting system.
- Bosch double dual magneto.
- Multiple jet carburetor.
- 12-inch Turkish upholstery.
- Full heavy nickel trimmings.
- Adequate baggage carrying compartment concealed in body, but easily accessible.
- Powerful and reliable brakes.
- Spacious interior. Tire pump integral part of the motor.
- 128-inch wheel base.
- Adjustable ventilating and rain vision windshield.
- Hoffecker steady hand speedometer. Electric horn.
- Tire carrier in rear.
- Silk Mohair top, cover, curtains.
- Full-floating rear axle.
- Resilient springs; 3-4 elliptic in rear, semi-elliptic in front.
- Large gasoline pressure feed tank with gauge in rear.
- Robe rail foot rest and foot mat in running-board.
- Plain, continuous enclosed metal guards.
- Easy riding qualities unexcelled.
- Oiling system demonstrated to be perfect.
- Truffault-Hartford shock absorbers.

National Motor Vehicle Company

Dept. 90 Indianapolis, Indiana

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Your Bearing Equipment Does Make a Difference



POSITION OF THROTTLE FOR SPEED OF 25 MILES PER HOUR ON AVERAGE CAR, USING POWER CONSUMING BEARINGS.

THROTTLE POSITION FOR SAME SPEED ON CAR EQUIPPED THROUGHOUT WITH NEW DEPARTURE BALL BEARINGS.

New Departure Ball Bearings

Save Gasolene Consumption by Diminishing Friction, and Minimizing Maintenance and Repair Costs.

EVERY practical motorist knows that power lost in transmission from its source to the point of application reduces the efficiency of the mechanism. More fuel is needed to do a given amount of work when the frictional losses are high, and only a comparatively small part of the motor energy is available for vehicle propulsion.

Ball Bearings overcome this very condition more completely than do bearings of any other type.

New Departure Ball Bearings are superior eliminators of friction. By conserving power at the bearing points, maximum motor energy is available, and the gasolene used to overcome the friction of bearings of other types is utilized for driving the car.

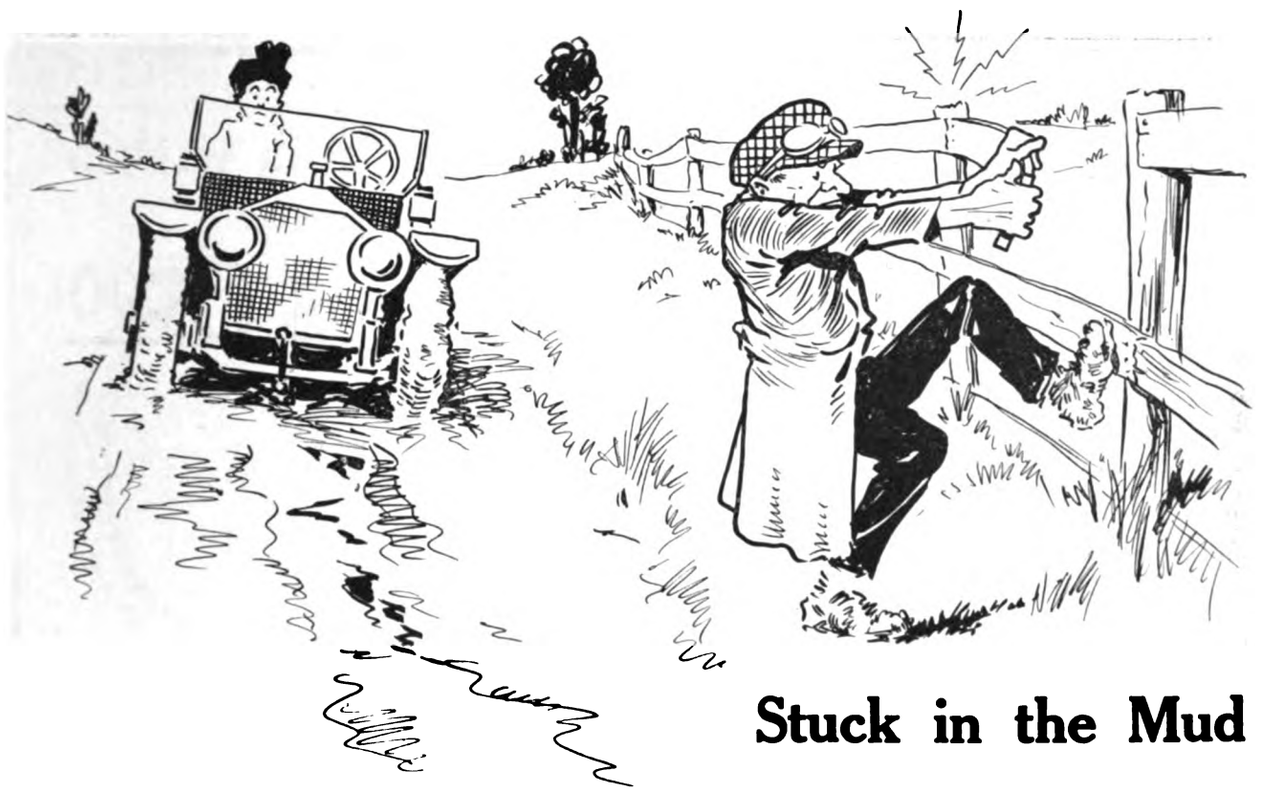
New Departure Ball Bearings are guaranteed, and have proven their quality by successful installation in the majority of American made cars.

Whether you are a manufacturer or motorist you should have our new brochure on "Bearing Friction and Its Elimination." Copy will be sent you on request.

THE NEW DEPARTURE MFG. CO., Bristol, Conn.

WESTERN BRANCH: 1016-17 Ford Building, Detroit

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Stuck in the Mud

Now comes the season of mud and the desire to get out into the country and see how she pulls.

If she stalls in the mud—what then?

If you crank by hand you make a raft out of a convenient fence.

IF SHE HAS A SELF CRANKER, you simply sit in the seat and push a button.

The Electric Self Cranker and the

GLBA

STORAGE BATTERY

care nothing for mud.

Write us for full information

Willard Storage Battery Company

CLEVELAND, OHIO

New York Branch—136 West 52nd Street
Chicago Branch—2241 Michigan Avenue
San Francisco Branch—243 Monadnock Bldg.
Detroit Branch—1191 Woodward Avenue
Indianapolis Branch—438 and 439 Indiana Pythian Bldg.

Depots in All Principal Cities in the United States, Canada and Mexico

(55)

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Elyria-Dean
TRADE MARK

Now the TUTO HORN is within the reach of every car owner

Improvements and Manufacturing in Large Quantities makes it possible to furnish the Genuine $25.00 TUTO for $15.00. This new price includes all of the Exclusive features that have made the TUTO horn so practical and popular:

$15.00

Two-tone Feature—Low note for regular service—loud note for emergencies—from one horn and one button.

Instantaneous Action—No loss of time for motor to "speed up."

Steering Wheel Fixtures—Protects the cord—gives neat, permanent job.

Button Always Under Thumb—Gives quick action in case of emergency.

Automatic Operation—Unconscious gripping of button upon approach of danger forces button clear down and gives **loud note—instantaneously.** No hesitating, no selecting of horn buttons, etc.

Reliability—Always responsive, as same button, cord and horn are used for both notes, thus are self-testing. There is nothing to oil or clean, so neglect will not interfere with operation or ruin the working parts, the same as in mechanical or motor horns.

Liberal Guaranty—Guaranteed indefinitely against inherent defects or breakage of parts due to such defects. We always give the customer the benefit of the doubt.

No Experiment—The Tuto Horn has been marketed for three years and has given unusual satisfaction through its reliability and freedom from trouble. This is proven positively by our records, which **show** that we have been called upon by less than 1% of Tuto owners for advice or repair parts.

Once a Tuto User, always a Tuto Advocate

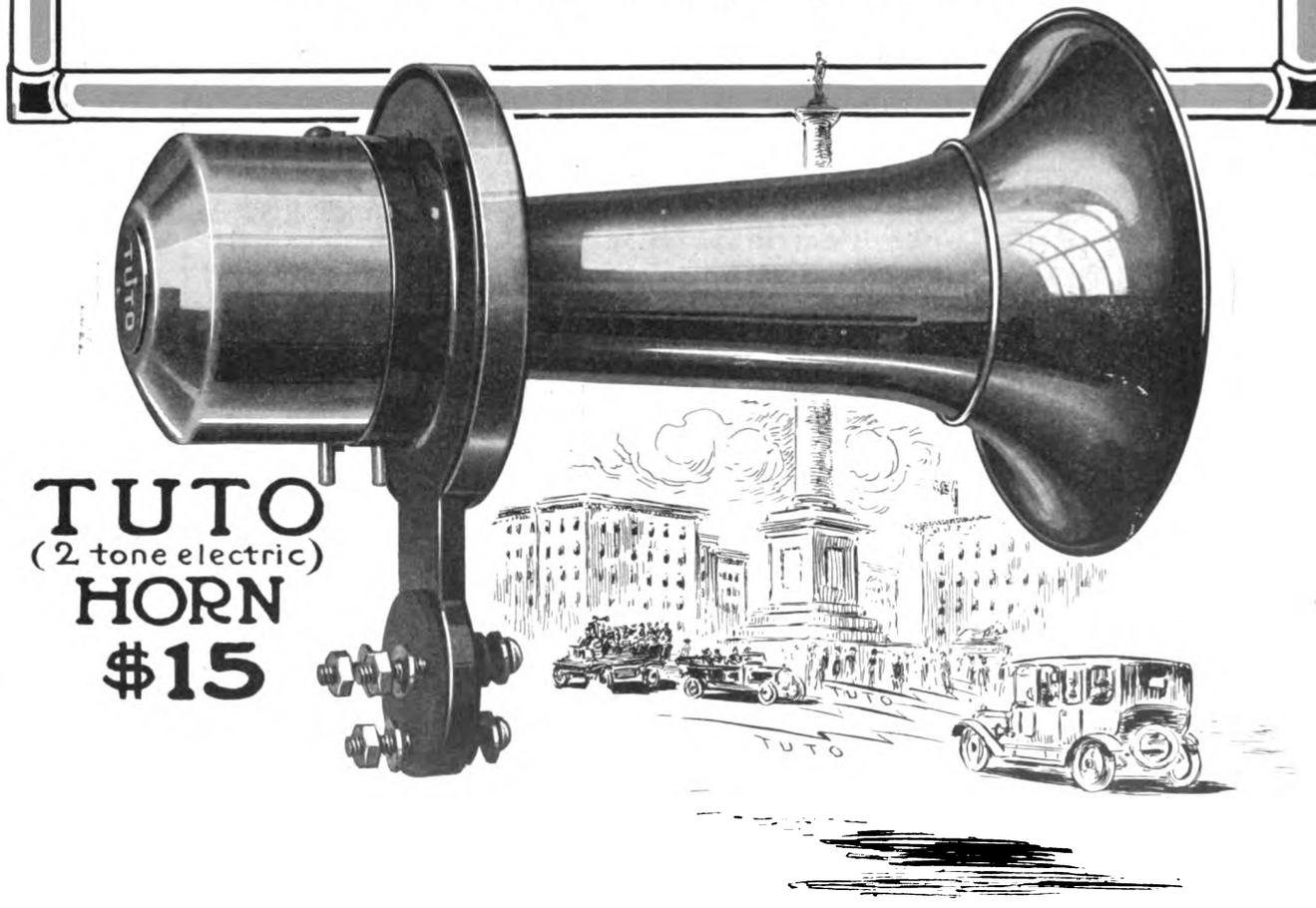
Tuto users never can go back to the old bulb horn or to the Slow Accelerating Motor Horn.

Elyria-Dean Products Manufactured Only By

THE DEAN ELECTRIC COMPANY

Kansas City, Mo. **501 Olive Street, Elyria, Ohio, U. S. A.** **San Francisco, Cal.**

"Look for Elyria-Dean Where Quality's Seen"



TUTO
(2 tone electric)
HORN
$15

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Elyria-Dean
TRADE MARK

A High Grade Electric Warning Signal Guaranteed, $8.00

THE REXO HORN IS THE STANDARD EQUIPMENT HORN, evidenced by the number of manufacturers who furnish the REXO on cars they make.

Made from the best of selected materials, assembled by expert workmen in a well-appointed factory.

The action is instantaneous, always responsive.

There is nothing to oil or grease, nor is it necessary to clean in gasoline, as there is nothing to clog or congeal.

Guaranteed indefinitely against inherent defects or breakage of parts due to such defects.

We always give the customer the benefit of the doubt.

Your Dealer will demonstrate the REXO for you today.

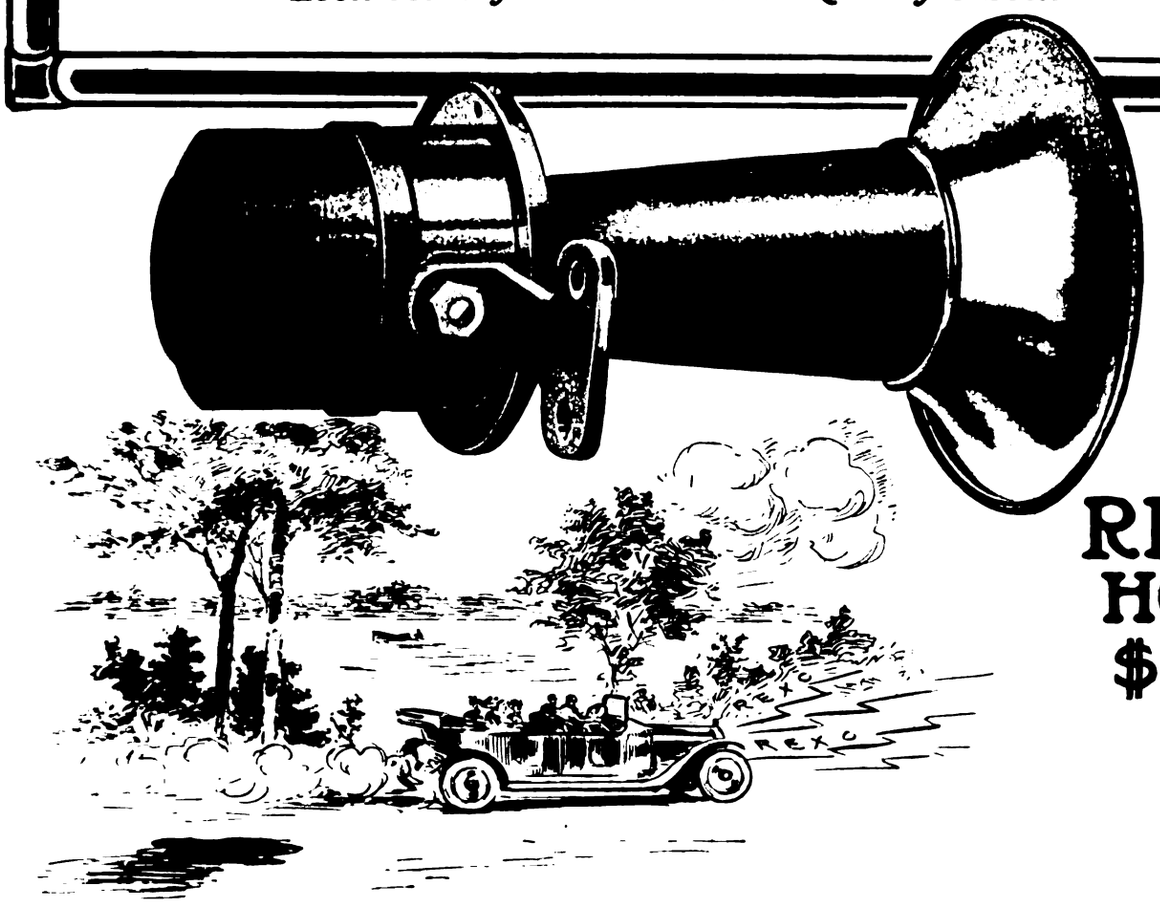
DEALERS: Ask for our dealers' proposition—it is a winner!

Elyria-Dean Products Manufactured Only By

THE DEAN ELECTRIC COMPANY

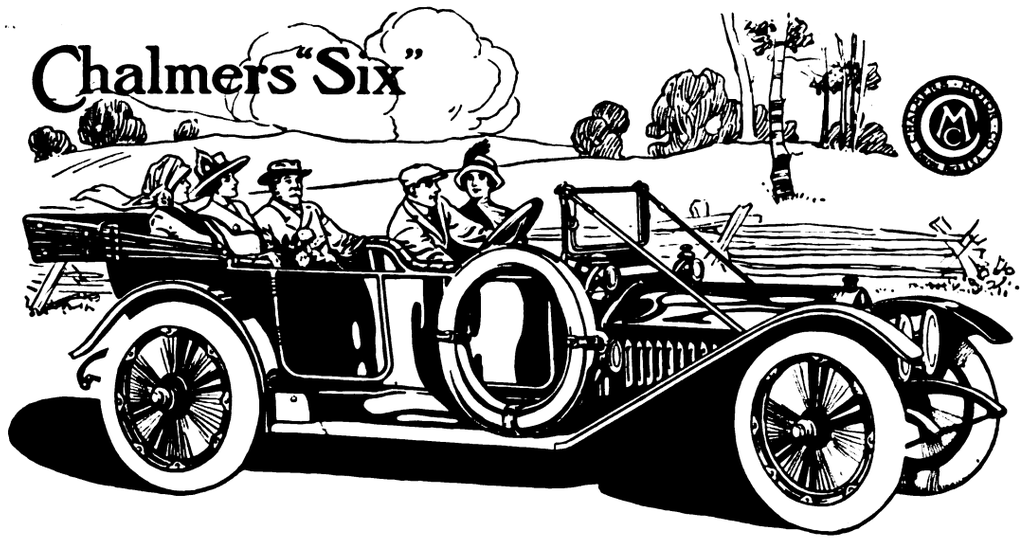
Kansas City, Mo. **501 Olive Street, Elyria, Ohio, U. S. A.** **San Francisco, Cal.**

"Look for Elyria-Dean Where Quality's Seen"



REXO HORN $8.00

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Of Thoroughbred Stock

You know what that expression means when applied to a horse—especially if used by one who knows horses.

What a thoroughbred is among horseflesh, the Chalmers "Six" is among motor cars. And we use the term exactly—as the old horseman would use it—and not in the careless speech of the grandstand.

For the Chalmers "Six" rings true to the thoroughbred definition—"pure bred and of running stock."

Staunch of frame and sinew, powerful, full of life, alert and eager, yet easily controlled—this great car has all the thoroughbred qualities.

Clean-cut in appearance, trim, graceful, well-groomed, the "Six" gives the same eye-delight as a handsome, proud, blooded race-horse.

And the "Six" is a pedigreed car, too. Its predecessors—Chalmers "30" and Chalmers "Thirty-six"—were winners before it—victors on track and road; record breakers in sales, too.

The "Six" is built in Chalmers shops under the direction of men who take as much pride in a fine motor car as horsemen ever took in fine racing stock.

And this great car, with such "stuff" in it (as the horsemen say), with such lineage behind it, such quality and breeding in every line of it, we sell you at a medium price—$2600 for the 7-passenger Touring Car.

More satisfaction, service, pride of possession, you cannot buy. Better performance you cannot find in any car men have yet built. Everything in the way of convenience and luxury this "Six" supplies you.

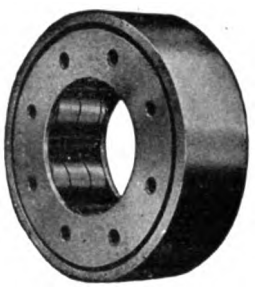
May we offer you proof in the car itself? Please phone or call at our dealer's salesroom.

Chalmers Motor Company, Detroit, Mich.

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HYATT QUIET BEARINGS



Line Contact *vs.* Point Contact

THE fundamental advantage of the roller bearing over the ball bearing lies in the fact that it has a line of contact as against the point of contact of the ball bearing.

The great increase of contact thus affected lengthens the life of the bearing by reducing the duty on the operating surfaces.

This basic principle is carried even farther in the Hyatt Roller Bearing by the use of a flexible roller that relieves the shafts and gears of excessive strain.

Vibrations that are ordinarily transmitted by other types of bearings are cushioned and absorbed by the Hyatt. It is this feature of the Flexible Roller that reduces noise.

HYATT ROLLER BEARING CO.
DETROIT. MICHIGAN
WORKS, NEWARK NEW JERSEY

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Now in Their Fourth Big Season of Doubling and Redoubling Sales

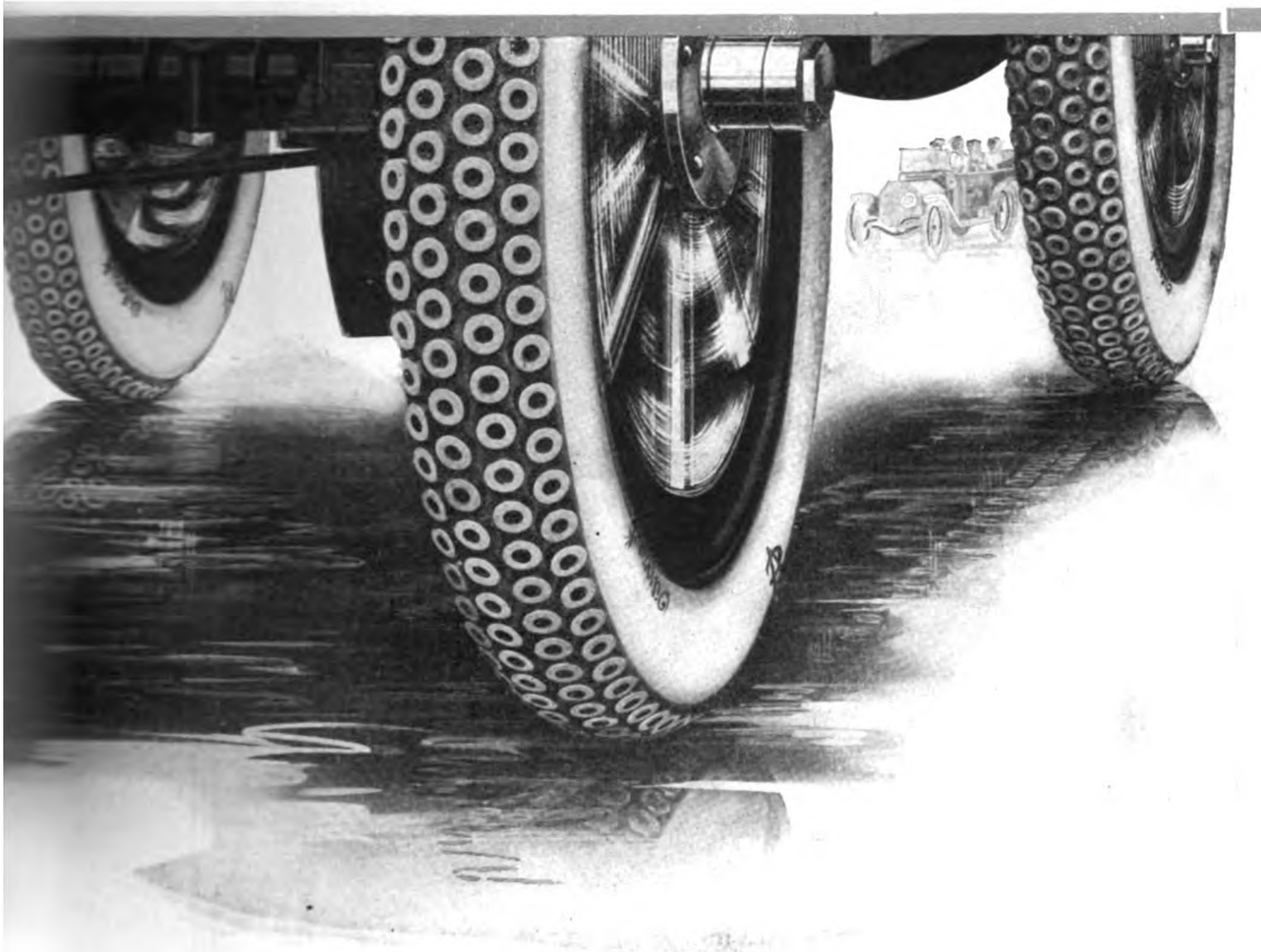


THE mirror-like slippery pavement affords as sure a footing for the car shod with Vacuum Cup Tires as the fine, dry macadam road. Whether the surface is wet or greasy, these tires are *guaranteed* not to skid, or are returnable at full purchase price after reasonable trial.

The thick-walled cups drive deep and give positive traction in mud. Discontent with tire *service* also ends abruptly with the adoption of

PENNSYLVANIA Oilproof VACUUM CUP TIRES

Digitized by Google



THEY are the heaviest tires of the rated sizes manufactured. Their construction is the strongest, their composition the toughest---and absolutely *oilproof*---immune from "oil disease." With each Vacuum Cup Casing goes a definite printed guarantee of

4,000 MILES

Their actual service mileage averages a far greater distance.

Important to Dealers: The handling of Vacuum Cup Tires is the smoothest, most satisfactory of all tire propositions, with particular reference to dealings with the consumer. Their unusual quality, their ready saleability, and the sound policy under which they are guaranteed and sold, put them in a class by themselves.

PENNSYLVANIA RUBBER CO., Jeannette, Pa.

BRANCHES

Pittsburgh, 505 Liberty Avenue Minneapolis, 34 S. 8th Street Detroit, 254 Jefferson Avenue Seattle, Armour Building
Cleveland, 1837 Euclid Avenue Kansas City, Mo., 514 E. 15th St. Chicago, 1004 Michigan Ave. Omaha, 215 S. 20th Street

Pennsylvania Rubber Company of New York

New York City, 1700 Broadway Boston, 149 Berkeley Street Dallas, 2111 Commerce St.

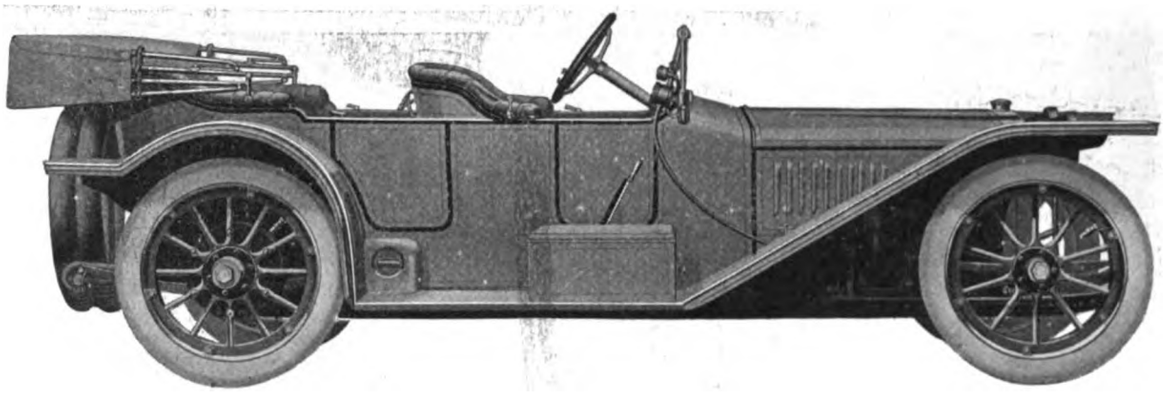
Pennsylvania Rubber Company of California

San Francisco, 512-514 Mission Street Los Angeles, 930 S. Main Street

An Independent Company with an independent selling policy

NON SKID TRADE MARK REG. U.S. PAT. OFF.

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The car and the contract

THE 1914 American Underslung "Six" is sold merely by a logical explanation of how underslung construction insures absolute riding safety, increases power by one-fifth, cuts vibration 50 per cent and actually reduces upkeep expense.

The American dealer need not make commonplace comparisons; he can concentrate on the big and plainly apparent advantages of underslung construction. He can make the length of the wheel base, the size of the motor and the completeness of the equipment of secondary importance.

And in the second place American Underslung snap and style creates endless inquiries. The entire community discusses it.

You cannot help making money with such a car and contract as we give you. Wire us today for territory details. If you agree we would like to send a district sales manager to see you. ***Tie up with a car that is talked about.***

AMERICAN UNDERSLUNG

TYPE 666
Six cylinders, 75 h. p., six passengers, electrically lighted and started. Price $4500.

TYPE 644
Six cylinders, 60 h. p., four passengers, electrically lighted, electrically started. Price $2750.

TYPE 422
Four cylinders, 32 h. p., two passengers, electrically lighted, self-starting. Price $1550.

All models completely equipped

American Motors Company :: *Builders* :: Indianapolis
426 So. Illinois St.

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A Mercury Switch Does It!

BAILEY ELECTRIC SYSTEM

Benjamin F. Bailey, the eminent electrical engineer, has made it possible at last for the purchaser to secure a high grade starting, lighting and ignition system on a medium priced car—a system in which all troublesome devices, such as reverse current relays, magnetic switches, vibrating contacts, delicate rheostats, slipping clutches, corroding platinum points have been eliminated. A patented mercury switch does it.

There are no moving parts in its system of regulation.

The illustration shows the equipment supplied with the Krit Roadster selling at $1100.

This Krit Roadster is fitted with 3 11/16" x 4¼", 4-cylinder motor. Compression, 75 pounds.

The Bailey starter will turn this motor over at 120 R.P.M., which is twice as fast as the average starter on $5,000 cars will turn.

The outfit is high-grade in every respect, and it is much superior to that offered by most cars selling for twice as much. Our Book "Bailey Electric Systems and Electric Lighting Explained" will be of great interest to you. It gives details and prices.

Bailey Electrical Company

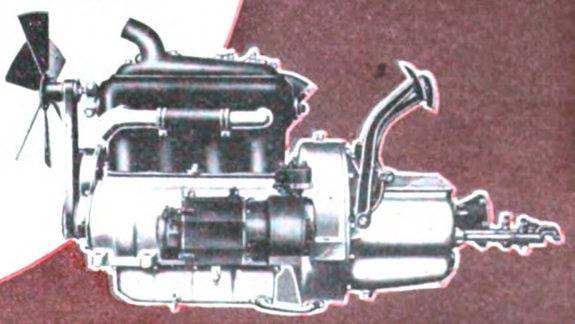
Grand Rapids, Mich.

WILSON & COSGROVE, Agents

Suite 6, Goldberg Building,

Cor. Woodward and Warren Aves.

Detroit, Mich.



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Good Axles Will Boost Your 1914 Sales

THE splendid reputation of Metal Products, applied to your 1914 cars, will increase your sales and add to the good name of your cars.

For several years a number of the best known automobiles have given axle-satisfaction by using Metal Products axles.

We have open capacity for 1914 for axles for both gas and electric pleasure cars. We make only the highest grade products, ***guaranteeing materials*** and ***workmanship*** and make deliveries as you want them.

We can give you what you want, either in standard type axles or those built to your specifications. We make unusually high grade rear axles of the pressed steel housing type.

Stock axles for immediate delivery.

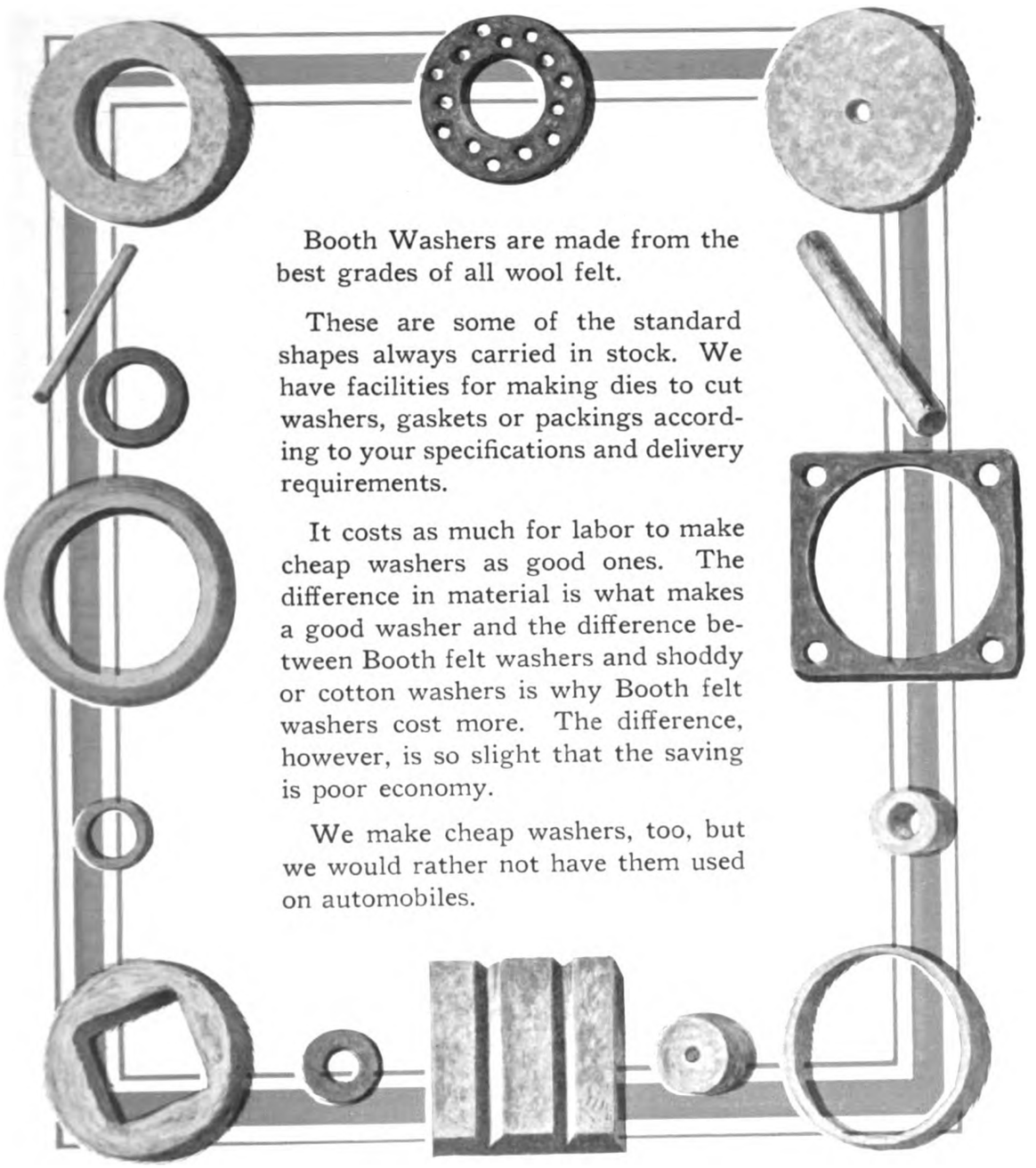
Take up your proposition with us before settling your contract.

Metal Products Company

Detroit, Mich.

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Quality



Booth Washers are made from the best grades of all wool felt.

These are some of the standard shapes always carried in stock. We have facilities for making dies to cut washers, gaskets or packings according to your specifications and delivery requirements.

It costs as much for labor to make cheap washers as good ones. The difference in material is what makes a good washer and the difference between Booth felt washers and shoddy or cotton washers is why Booth felt washers cost more. The difference, however, is so slight that the saving is poor economy.

We make cheap washers, too, but we would rather not have them used on automobiles.

N. E. BOOTH
664 Pacific St., Brooklyn, N.Y.
Canadian Office and Factory
The Booth Felt Co., Ltd. Gananoque, Ont.

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What are YOU doing to GUARANTEE the tightness of your bolted-up construction?

The efficiency of a nut lock is based on the efficiency of a castellated nut and cotter key.

To attain this efficiency the NUT LOCK must be of a section designed to give proper strength, and of material so treated that its efficiency will outlast the efficiency of the bolt on which it is used.

This efficiency is demanded by steam railroads who have used the device for forty years, but—

How many automobile manufacturers can tell you whether the NUT LOCKS used in their last year's series have an efficiency beyond a common washer?

Where refinements count for so much—where security is obviously of the utmost importance both from a selling and a moral standpoint—can you afford to be indifferent or lax regarding a vital detail?

Would you like to "get down to brass tacks"?

THE NATIONAL LOCK WASHER COMPANY

CHICAGO, ILL.——————NEWARK, N. J.

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SPARTON

THE ELECTRIC SIGNAL DE LUXE





A QUARTER million annual capacity made the "SPARTON" price.

THE SPARKS-WITHINGTON COMPANY, one of the world's largest producers of pressed metal and Automobile parts, waited nearly two years after completing the present "SPARTON" before announcing the SELLING PRICE.

WE KNEW IN ADVANCE that we were best equipped to make the BEST WARNING SIGNAL. We knew that any WARNING SIGNAL bearing the SPARKS-WITHINGTON guarantee would be instantly indorsed by the industry and car owners alike.

WE WERE EQUALLY POSITIVE that a high class MOTOR DRIVEN Signal selling at the buzzer horn price would secure immediate "SPARTON" distribution wherever Warning Signals are sold.

AND NOW THE "SPARTON," the Electric Signal De Luxe. Everything you could possibly expect in a superior Warning Signal and delivered under an unconditional selling and make-good guarantee.

It Will Be More Profitable to Sell the "SPARTON" than to Compete Against it

FOUR MODELS FOR SMALL and large cars alike. Both dash and under-hood types finished in gunmetal or with gunmetal and brass or nickel projectors.

PRICES $10.00 to $15.00

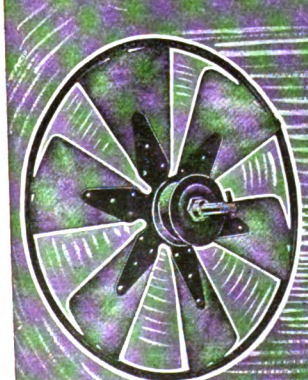
The new "SPARTON" catalogue will be mailed on request.

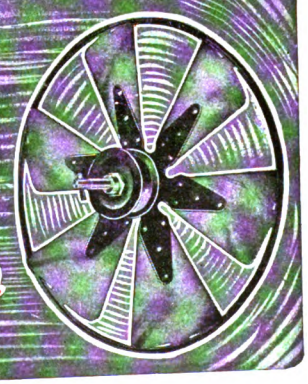
INTELLIGENT MOTOR COOLING IS VITALLY NECESSARY TO SUCCESSFUL MOTOR CAR BUILDING

Sparks-Withington radiator Automobile fans are more in demand than all other makes combined. We specialize in the delivery of MORE AIR. Our product is accepted by most Car Manufacturers as STANDARD.

In our testing laboratories we have compiled important data on cooling. It is the result of many years' experience that could only be secured through solving intricate cooling problems. Let us know your requirements. We build on an average of 1000 FANS DAILY. The chances are that we can meet your specifications from stock.

Our booklet on COOLING tells all you need to know. IT'S FREE.

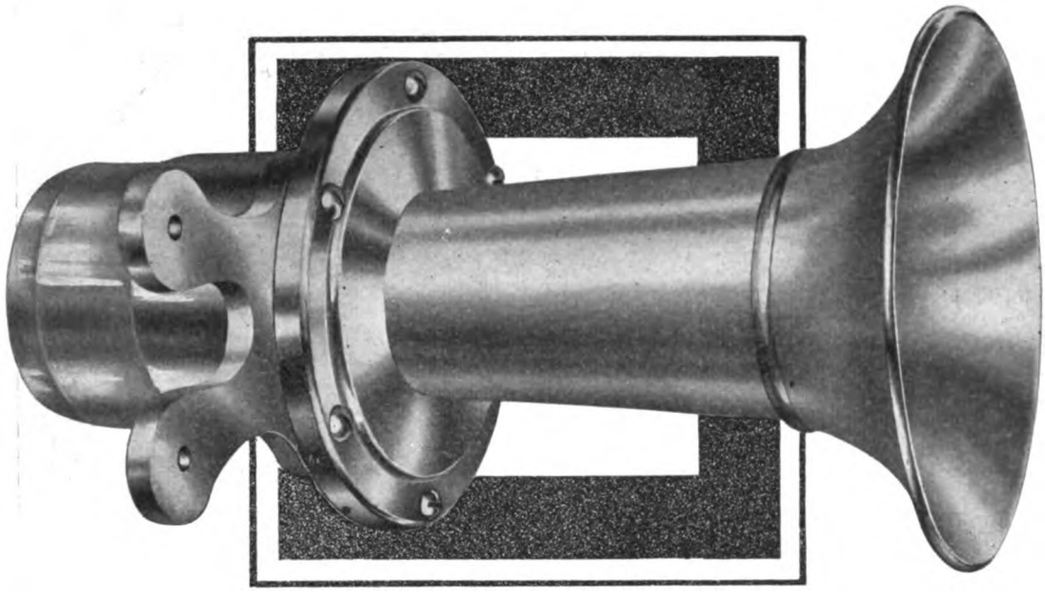




SPARKS-WITHINGTON CO.
JACKSON, MICH.

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Square Motor Horn



Standard
$15

LENGTH, 10¼ INCHES
FLARE, 5¼ INCHES
6 VOLT MOTOR
RUNS ON DRY CELLS OR STORAGE BATTERY
FINISH: BLACK ENAMEL, BRASS OR NICKEL

Motor Driven

You've got to decide at once

Orders received from the metropolitan district alone in the last two weeks show that Square Motor Horns at Square Motor Horn prices have met public approval.

We can sell all we can make but we want Square Motor Horns sold in every city and town in the country.

Orders filled in the order they are received. Where is yours, Mr. Dealer?

We sell only through dealers and protect dealer and user absolutely

Junior, $10

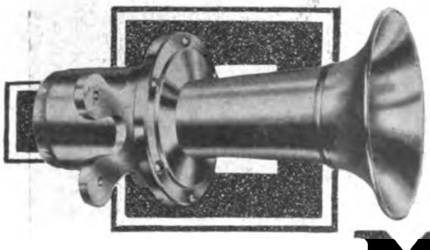
LENGTH, 10 INCHES
FLARE, 5¼ INCHES
6 VOLT MOTOR
RUNS ON DRY CELLS OR STORAGE BATTERY
FINISH: BLACK ENAMEL, BRASS OR NICKEL

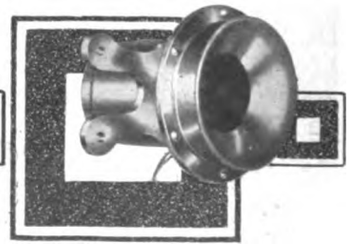
Juniorette $9

LENGTH, 5 INCHES
FLARE, 3½ INCHES
6 VOLT MOTOR
RUNS ON DRY CELLS OR STORAGE BATTERY
FINISH: BLACK ENAMEL, BRASS OR NICKEL

THE SQUARE MOTOR HORN COMPANY, Inc.

496-98 East 134th Street
New York City





Motor Driven

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Stewart Speedometer
MAGNETIC PRINCIPLE

800,000 In Use

There are now over 800,000 Stewarts in constant use—which is four times as many speedometers as all the other makes combined.

This statement is not published as a boast—but only to further emphasize the practicability of the *magnetic* principle.

If the *magnetic* Stewart was not the superior speedometer it could not have grown to be the most popular speedometer.

Such an increasing and indelible popularity is the most sincere and secure indication of satisfaction and success.

The Stewart Speedometer Factory
1949 Diversey Blvd.
Chicago, U. S. A.

Service Stations in all important cities all over the world

The most popular Speedometer in the World

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At Camp Week-End

Third of the Hupmobile Out-door series now appearing in the nation's advertising—and giving Hupmobile dealers a new sales lead.

A huge sales organization with one definite aim

Hupmobile

Hupmobile "32" Six Passenger $1200 f. o. b. Detroit

In Canada, $1450 f. o. b. Windsor

Four-cylinder motor, cylinders 3¼-inch bore by 5½-inch stroke, cast en bloc. Unit power plant.

Selective type transmission, sliding gears.

Irreversible, screw and double nut steering gear.

Full-floating rear axle.

Twelve by two-inch brakes, external contracting and internal expanding.

Wheelbase, 126 inches.

Tires, 33x4 inches.

Equipment of windshield, mohair top with envelope, Jiffy curtains, speedometer, quick detachable rims, rear shock absorber, two folding and revolving seats in tonneau, tonneau foot rests, gas headlights, Prest-O-Lite tank, oil lamps, tools and horn.

Finish, black with nickel trimmings.

"32" Touring Car *In Canada, $1150*	$1000
"32" Roadster *In Canada, $1150*	$1000
"20" H.P. Runabout *In Canada, $850*	$750

F. O. B. Detroit, *or Windsor*, fully equipped

Our aim is to make every Hupmobile dealer an integral part of a huge sales organization—not let him remain merely an automobile dealer.

We believe thoroughly in co-operation.

We want the co-operation of every Hupmobile dealer, naturally.

But, what is vastly more important to the dealer himself, we want him to accept and avail himself of our co-operation in his own territory.

We want the Hupmobile dealer to be as close to the factory as those members of the sales department who are inside the factory.

He should be, in fact, a member of the Hupmobile sales organization—working along definite lines, with a very definite purpose to accomplish.

And we can materially aid and assist every Hupmobile dealer who imbues himself with this spirit, as the majority of our dealers have learned.

A car with a reputation, and the quality to maintain its good name; a widespread and continuous advertising compaign; a home journal for Hupmobile dealers and no one else; sales suggestions of real and definite value—

These are the Hupmobile dealer's privileges and prerogatives — the things that link him closely and securely to the factory.

These are advantages beyond the power of every motor car manufacturer to offer.

Hupp Motor Car Company, 1254 Milwaukee Ave., Detroit, Mich.

Canadian business handled by Hupp Motor Car Co., Ltd., Factory, Windsor, Ont.

Digitized by Google



MR. DEALER---

How would you like to be able to talk to your prospects as follows?

"Here is a starter that is absolutely automatic. You have seen so-called 'press the button' starters which worked when you pressed the button—provided you did a few other things also. With this starter you just forget the other things.

"No, its automatic action is **not** due to a lot of complications! On the contrary, it eliminates practically all the mechanism that used to be thought necessary, such as intermediate shifting gears, ratchet drives, friction clutches and so on. There is absolutely nothing to this starter except a well-built electric motor having a certain amount of end-play to the armature.

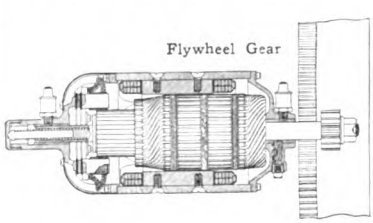
"When the button is pressed, the armature automatically moves endwise till its pinion engages the flywheel gear. Then it turns the engine over, and automatically slips out of mesh at the instant of the first explosion!

"This starter operates **quietly,** too, because the gears do not stay in mesh with the flywheel for even an instant after the engine starts.

Just Press the Button

"Some starters need a friction clutch to protect them from a kickback. This starter will turn the engine over **in spite** of an advanced spark, if the operator should be careless.

"With all its power, this starter weighs only 47 pounds. It is built by a concern which never yet has produced a commonplace article to compete with commonplace products."



The RUSHMORE STARTER

will make you a satisfied customer with every sale; and your profits will be **real** profits because there are no comebacks.

If your cars are not Rushmore-equipped you will want to know the Rushmore System anyway, not only the Starter but the Dynamo, which is as much better than other dynamos as the Rushmore Starter is better than other starters.

Send your name for illustrated booklet with full description

Rushmore Dynamo Works, Plainfield, N. J.

LONDON PARIS BERLIN

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THE ATTERBURY LINE



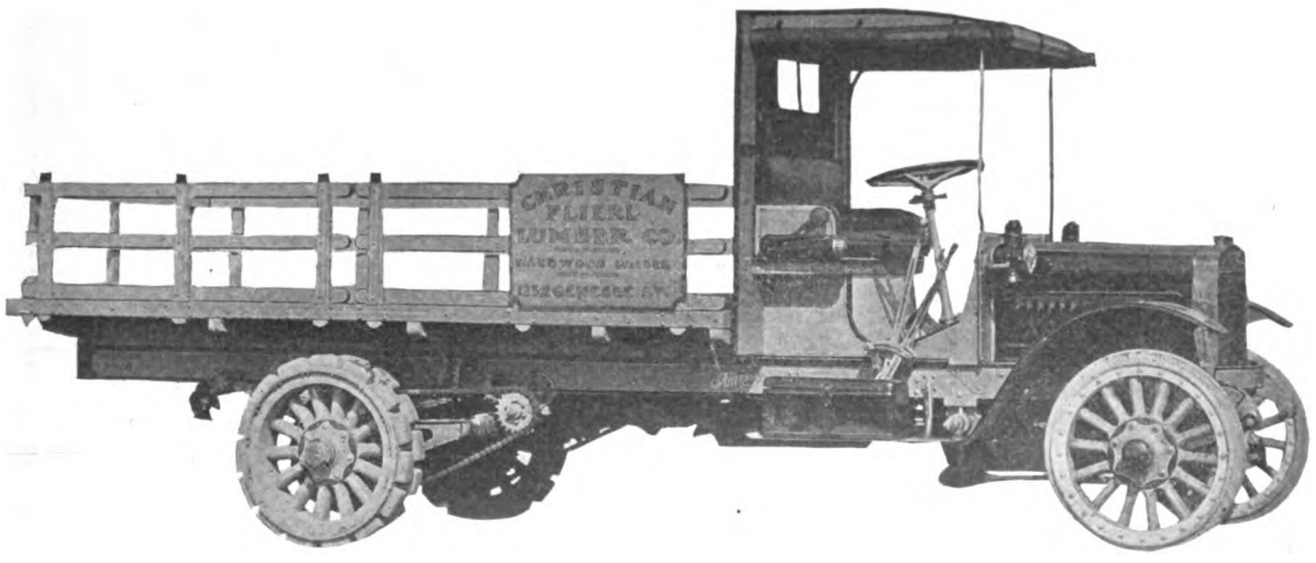
As a matter of history it is interesting to know that among the first commercial cars produced by this company was a fleet of fifty sight-seeing busses for use at the St. Louis World's Fair, 1904.

Soundness of Atterbury design and thoroughness of Atterbury construction is shown by the fact that many of them are still giving as good service as ever at a phenomenally low upkeep cost.

The Atterbury radius rod construction is the principal factor in giving our trucks the length of life for which they are famous. This radius rod has two vertical and two horizontal motions and is provided with a heavy shock absorbing buffer spring which effectually takes up the shocks and strains incidental to rough roadways or sudden starts and stops.

Our engineers are constantly experimenting and testing to find weak points in Atterbury construction. We keep in close touch with Atterbury users to see what develops from their use of Atterbury trucks.

Wherever we find a weak point we remedy it in our design. This policy carried out for the ten years we have been in business has developed Atterbury trucks to a degree of perfection not equaled by any on the market.



ATTERBURY MOTOR CAR COMPANY

BUFFALO **NEW YORK**

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BOSCH PLUGS

ARE OBTAINABLE EVERYWHERE



BOSCH Plugs are carried by most of the more prominent dealers throughout the United States and Canada. A very thorough and extensive sales system has been arranged so that if any dealer is not yet carrying Bosch Plugs he can obtain them from Bosch Distributors, Bosch Supply Stations, or Bosch Branches.

These three score or more stations are prepared to furnish Bosch Products promptly and with a minimum of carriage expense, otherwise made large by far distant points of supply.

Through these many distributing points it has been made easy for you to procure genuine Bosch Products, Bosch Plugs, Bosch Magnetos, etc.—the kind that satisfy and stay sold.

There is no question of value or doubt of service when you buy Bosch Plugs. They are as good as Bosch Magnetos.

Address "Bosch Distributors" at Portland, Me.; Boston, Mass.; Buffalo, N. Y.; Rochester, N. Y.; Philadelphia, Pa.; Pittsburgh, Pa.; Baltimore, Md.; Richmond, Va.; Atlanta, Ga.; Cincinnati, O.; Toledo, O.; Indianapolis, Ind.; Minneapolis, Minn.; Des Moines, Ia.; Omaha, Neb.; Kansas City, Mo.; St. Louis, Mo.; Denver, Colo.; Seattle, Wash.; Portland, Ore.; Sacramento, Cal.; Los Angeles, Cal.

FROM YOUR DEALER **$1.00** IN THE U.S. Each OR ORDER DIRECT

BOSCH MAGNETO COMPANY

224 WEST 46 STREET NEW YORK CITY.

Chicago :: Detroit :: San Francisco :: Toronto



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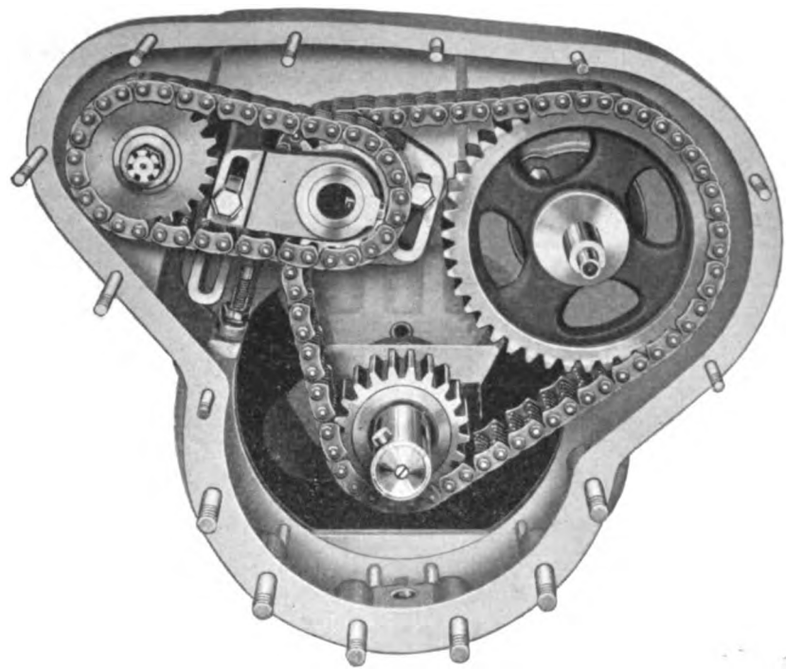


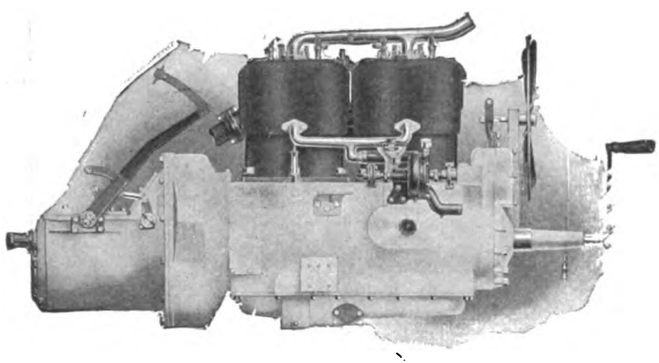
The latest Ergon Motor, Model D, 4⅜x6 replaces the timing gears by silent chain to magneto, pump and valve actuating mechanism.

The adoption of the Renold Silent Chain was decided upon after exhaustive tests which proved its efficiency.

Some of the results are: less power consumed; no vibration in the actuating mechanism it drives; no vibration in chain itself.

This feature, coupled with other elements of Ergon construction, makes the new high power, long stroke, Model D Motor one of the most economical, durable and efficient motors on the market.





Ergon motors are built for pleasure cars and trucks:

Model C, .	3¾ x 4½
Model CX, .	4 x 4½
Model D, .	4⅜ x 6

We can make prompt deliveries in large or small quantities, in any size, either independent or of the unit type.

If you are worried about deliveries, write us.

HAZARD MOTOR MANUFACTURING COMPANY ROCHESTER NEW YORK

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"American"



Axles of Quality

EXPERT judgment of a motor car discriminates sharply between external features which may be optional with any car, and those fundamental features that are built into it.

We don't think any one will dispute the statement that of those features which are both vital and distinctive, it is the axle that really establishes a car's class.

The satisfactory operation of any car, whether measured in dollars or in security, is based upon axle efficiency. And this is as true of a gasoline car making its own power, as it is of an electric which leaves the garage with a measured amount of latent power in its batteries.

The axle problem is wholly one of power transmission, which depends upon the material used, excellence of design and durability of construction. Judged by any one of these factors, well posted automobile engineers will frankly concede the superiority of "American" Axles.

The adoption of "American" Axles is simply a quality proposition. The owner of a car equipped with them has the assurance that nothing equally good can be bought at any price.

"American" Axles offer the option of our own perfected bevel drive or the famous Lanchester-Daimler Worm Drive



THE AMERICAN BALL-BEARING COMPANY, Cleveland, Ohio

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Here's The Most Modern, Efficient, Reliable Electric Starting Motor on the Market

AUTO-LITE ELECTRIC STARTING and LIGHTING SYSTEM

The Electric Auto-Lite starting motor shown in the illustration is a 4-pole, series wound, 6 volt machine, weighing 36½ lbs.

It is 8¾" long by 5¼" wide.

It may be operated in either a vertical or horizontal position.

It is compact, very simple in design, needs little attention—lubricated by grease which requires renewal only once or twice a year.

The entire outfit is enclosed.

Its construction and design is such that it may be readily adapted to practically every existing type of automobile gas engine.

This motor will spin a 6 cylinder engine, 3¾" bore by 5¼" stroke, having a compression of 60 pounds, over 100 R.P.M. (greatly above the necessary speed for positive starting), with a current demand of 135 amperes at 6 volts.



"As Sure as the Whirl of The World."

Send 10 cents in stamps for our handbook on "Automobile Electric Systems."

Other Important Details

The outfit is entirely waterproof.

The coils are impregnated, varnished, and baked.

The armature is mounted upon a very heavy shaft, accurately ground, and runs in extra large ball bearings.

The commutator is extra large.

There is no sparking at the brushes.

An uninterrupted flow of current is assured by the use of shunt or "pigtail" connections to all brushes.

The four brushes are easily accessible.

Only the best of materials are used, and the workmanship is high grade in every respect.

Has been thoroughly tested on many motor cars under a variety of conditions, and has successfully performed its function in all cases.

The Electric Auto-Lite Company

as an organization is financially and mechanically able to handle contracts of any size—to give you apparatus which will meet your requirements in every detail, whether for starting, lighting or ignition purposes.

One of the largest, exclusive manufacturers of electric lighting and starting systems in the country.

The pioneer builders of the 6-volt starting systems.

Let us have your specifications.

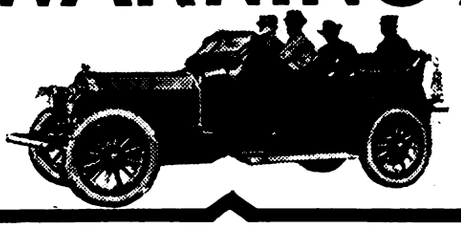
The Electric Auto-Lite Company

Toledo - - - - - Ohio

Branches: New York Kansas City San Francisco

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WARNING!





TWO NEW SIXES FOR POLICE

Department Strengthens Up Service Materially

Two new recruits have joined the Detroit Police department. They are Havers Six-60 cars and went into service there immediately after being purchased for duty this week. Already they have covered many miles between them in emergency flights. One of the cars is a new one for the department. They are cylinder and one powerful motor. They are painted in the usual police colors and have been put on a circuit especially because of their speed. Every car has a powerful siren on the front and two powerful searchlights on the rear. They are equipped with two-way radio sets and are remarkable cars for the purpose. They are manufactured by the Havers Motor Car Company at Port Huron, Mich.

Speedsters, Quit It!

The Detroit Police Dept. has just placed two fast, powerful Havers Six-60's in commission.

Speedsters, take this warning, for you can't beat the Havers

NEWTON.

THE HAVERS SIX

swift as the winds when needful, can be throttled down to two miles an hour on high.

The Havers Six is a big, luxurious, comfort-giving car. It is the leader in the sensibly priced sixes, for the Havers Company has been building sixes exclusively for the past four years to the everlasting satisfaction of their owners.

Of course you have noticed the constantly increasing number of Havers cars on the Detroit streets. Havers beauty and lines are hard to forget.

Take a tip from the Police Department. Investigate the Havers Six. It will save you time and money.

E. B. Newton Auto Co.

Distributors for

Havers Motor Car Co.

Detroit

Havers Six-44 $1850

Havers Six-60 $2350

The above is a small reproduction of a big advertisement announcing the installation of the Havers Six-60 as the "emergency fliers" of the Detroit Police Department.

The Havers Six is not a Detroit made car. It is made in Port Huron, and captured the "emergency fliership" in competition with a dozen of the best known local makes.

Because Detroit is the centre of the great automobile industry, we have for years kept out of this field.

Local influence; factory service; made us feel the fight would be a hard one.

But so many Detroit dealers have wanted the Havers Six, we finally took the plunge about four months ago and find the water fine.

Already you see the Havers Six—a Port Huron made car—everywhere on the streets of Detroit.

***Character—Price—Record—Appearance* will tell, even in the "centre of the industry."**

HAVERS MOTOR CAR COMPANY, Port Huron, Mich.

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A Life-Size Portrait ~

IT SPEAKS FOR ITSELF



Gurney Ball Bearing Company
Jamestown, N. Y.

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FISK Tubes

Gold Bond (Red)

Pure Para (Gray)



Fisk Inner Tubes Are Not *Simply* Tubes

They are a genuine factor in the reduction of upkeep expense.

They are made of Para rubber of the finest grade which accounts for their lasting qualities. They are spliced in an original way which results in uniform construction. There are no thin spots in them.

They are built regardless of cost. There is no sacrifice to economy of manufacture. The only economy we recognize is that which we can ultimately offer the tire user.

FISK TUBES represent the fullest development in tube making. They offer possibilities of service which give them a value double that of ordinary equipment. Many Fisk Tubes are in use today which were purchased two and three years ago.

Write Department 23
For Our Dealer Proposition

We have a money-making proposition for Dealers. Not only do Fisk Tubes give complete satisfaction (complaints averaging fewer than 1 to every 10,000), but they are silent salesmen for Heavy Car Type Fisk Tires, intelligent owners soon becoming interested in all the products of a company making such perfect tubes.

The Fisk Rubber Company
Chicopee Falls, Mass.

Factory and Home Office

DISTRIBUTORS

BRANCHES IN 41 CITIES

THE FISK RUBBER COMPANY OF N. Y.

FISK PNEUMATIC TIRES ARE GUARANTEED WHEN FILLED WITH *AIR* AT THE RECOMMENDED PRESSURE AND ATTACHED TO A RIM BEARING EITHER ONE OR BOTH OF THE ACCOMPANYING INSPECTION STAMPS. WHEN FILLED WITH ANY SUBSTITUTE FOR *AIR* OR ATTACHED TO ANY OTHER RIMS THAN THOSE SPECIFIED, OUR GUARANTEE IS WITHDRAWN

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Regal

You Must Sell the Car That Fits the Average Pocketbook

Price is the big thing in the automobile market today. The prosperous dealers are the men who have analyzed rightly the automobile demand.

These men have found that cars around the $1,000 mark and below it are the big sellers. It's a price that fits the majority of pocketbooks. It's a figure that brings the buyer into the salesroom *if the door is left open.* But — *this is imperative — the winning car must combine quality with price.*

That is the combination found in

Regal Underslung Cars

Regal dealers in every part of the world are prosperous. They have the car that fills the greatest demand in the field —

Quality Cars Around $1,000!

Superior Features of the Regal Underslung:

Thousands, experts and users, declare the Regal Underslung Cars are the safest built. The low construction reduces skidding to a minimum and eliminates the "turning turtle" danger. When fully equipped a Regal Underslung will cling to a 60 degree incline.

You can assure your customers that the Regal is unsurpassed for easy riding qualities. The underslung construction permits the use of very flat springs, everywhere admittedly the best in point of service and comfort. Regal owners know nothing of jarring and jolting. The Regal springs are attached so that the vibrating in each "half spring" is different.

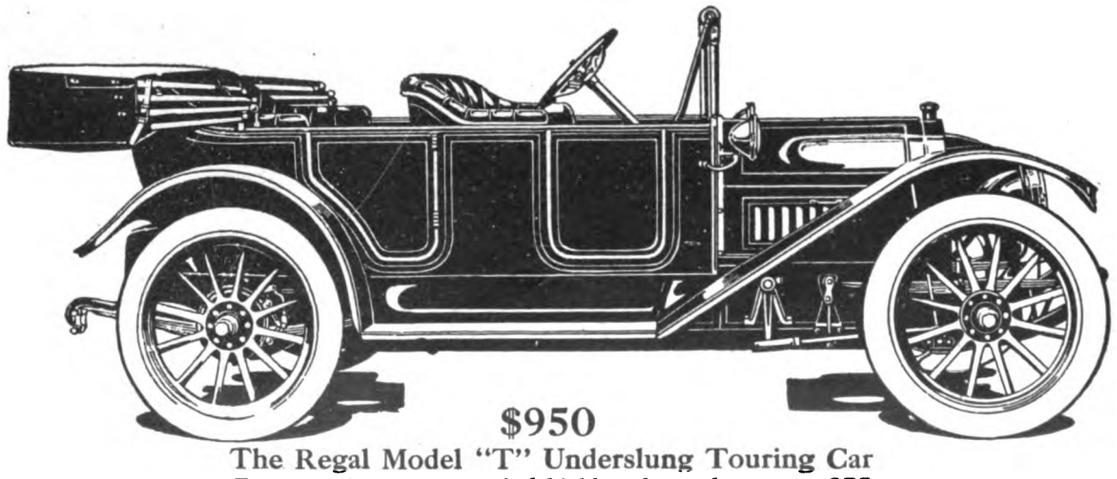
Regal Cars are economical cars. They reduce tire wear and cut down gasoline bills.

The long, sweeping, rakish Regal appearance has created admiration in the capitals of the world.

We want aggressive, wide-awake dealers all over the United States. We have the car with quality and price—the car you can easily sell—the car that will stand up under all conditions and thereby build your future business.

We've got a real dealer's message for you. We want to tell you more about the Regal and the opportunities it offers you. Write for our excellent, co-operative dealers' proposition. We actually help dealers to sell cars. You can always depend on the Regal factory for service, delivery and sales co-operation. Write today. *Ask for Catalog N.*

The Regal Motor Car Company
DETROIT



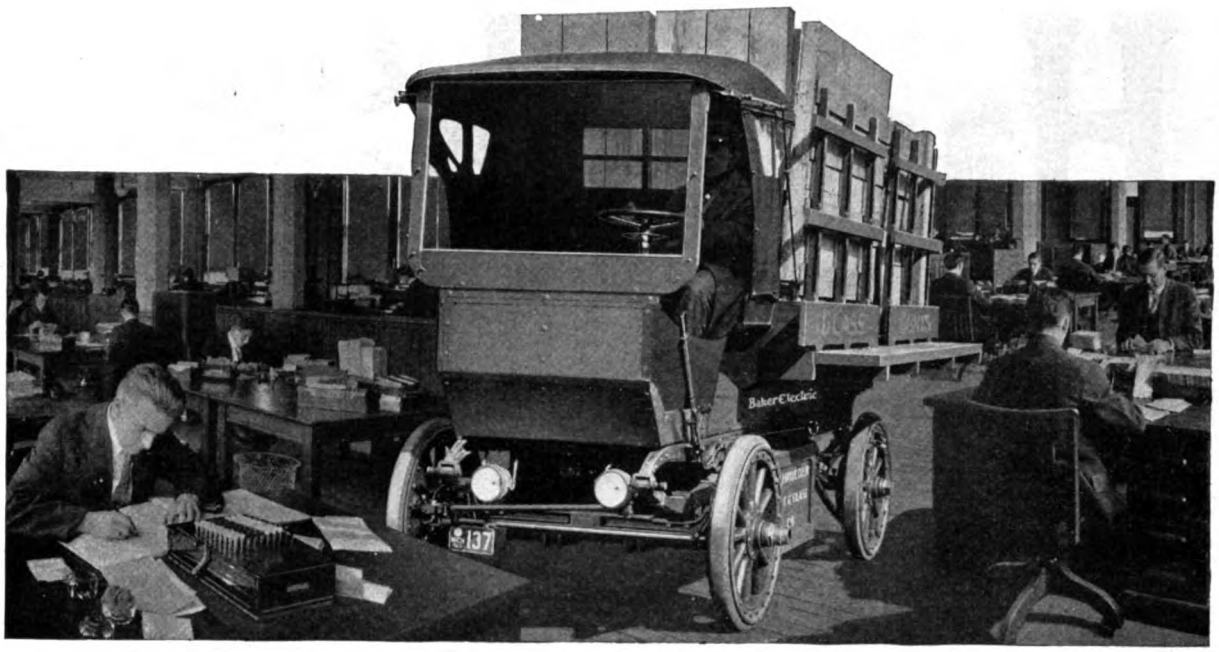
$950

The Regal Model "T" Underslung Touring Car

Extra equipment, top, windshield and speedometer — $75

(91a)

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The Accounting Department Must Justify Motor-Haulage



THE record will go down, black on white, in your books—day by day, week by week, year by year.

Will the balance be on the right side?

That depends on three things: No. 1—Does your business fit the truck? No. 2—Does the type of truck fit your business? No. 3—Will the truck stand up to the job after you get it? *Don't neglect No. 3.*

The first two have been studied and investigated, from every angle, put down in exact figures, settled definitely. *What's the answer to No. 3?*

Look to the parts that carry the load

When the giant truck rumbles past you over the cobblestones, don't look merely at the body, *look beneath.* That's where the load comes—on the axles and their bearings.

Take a five-ton truck, for example, it weighs about 8,000 pounds, its load, 10,000 more. *Nine tons supported by the four axle* spindles!

Only long years of experience and the devotion of an entire great organization to axle-building can safely determine the size and design of those spindles, the selection and heat treatment of the steel.

It is because Timken-Detroit Axles are made by such an organization that they are standing up under so many thousands of motor trucks today, both electric and gasoline driven.

750 lbs. on a ⅝-inch roller

The nine tons rest also on the ⅝-inch rollers in the eight Timken Bearings on the four axle spindles.

And not on all of the rollers at that, because only one-fifth of the 120 rollers in the eight bearings, or 24 rollers, are actually under the load at any one time.

Think of it, nine tons on 24 rollers. 750 lbs. on each!

But Timken Tapered Roller Bearings carry this load—what's more they take the tremendous side-pressure when corners are turned, the pound and jolt of the rough roads, the extra stresses due to careless driving.

All the conditions have been foreseen by Timken Engineers—and they have established a factor of safety far enough above the 750 lbs. to *make sure of emergencies.*

Building truck axles and bearings that stand up to the work

Timken Engineers have built on the experience of all motor-truck designers and builders, domestic and foreign.

They have minutely tabulated records of their own experience, going back before the first practical conception of motor-haulage.

Timken Engineers have at their service two great organizations whose only occupations and ideals are to build the best possible axles and bearings for pleasure and commercial cars.

They can help you answer that third question with a "Yes."

You will find the whole story of axle and bearing importance—for pleasure cars as well as motor trucks—in the Timken Primers No. T-1 "On the Care and Character of Bearings," No. T-2 "On the Anatomy of Automobile Axles." Sent free, post-paid, from either address below.

The Timken-Detroit Axle Co.
Detroit, Mich.

The Timken Roller Bearing Co.
Canton, Ohio

TIMKEN
BEARINGS & AXLES

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Hartford Cone Clutches

WHAT is the advantage of specialization?

Couldn't we make exactly as good a clutch if our time and energies were divided and applied to several problems?

Could we turn out several products of uniform excellence as promptly as our special machinery enables us to do with our chosen specialty---cone clutches?

Can any manufacturer, using only standard machinery, compete with us in our chosen field in quality, price or prompt deliveries? Can the manufacturer who makes several different products stand the investment in special machinery for each of several lines and still maintain the quality of materials and workmanship that characterizes Hartford Cone Clutches?

In the manufacture of cone clutches, where parts must be interchangeable, and where the percentage of accuracy required is generally one hundred, special machinery with its complete equipment of dies, jigs and tools is as necessary to the manufacturer's success as to the success of his product.

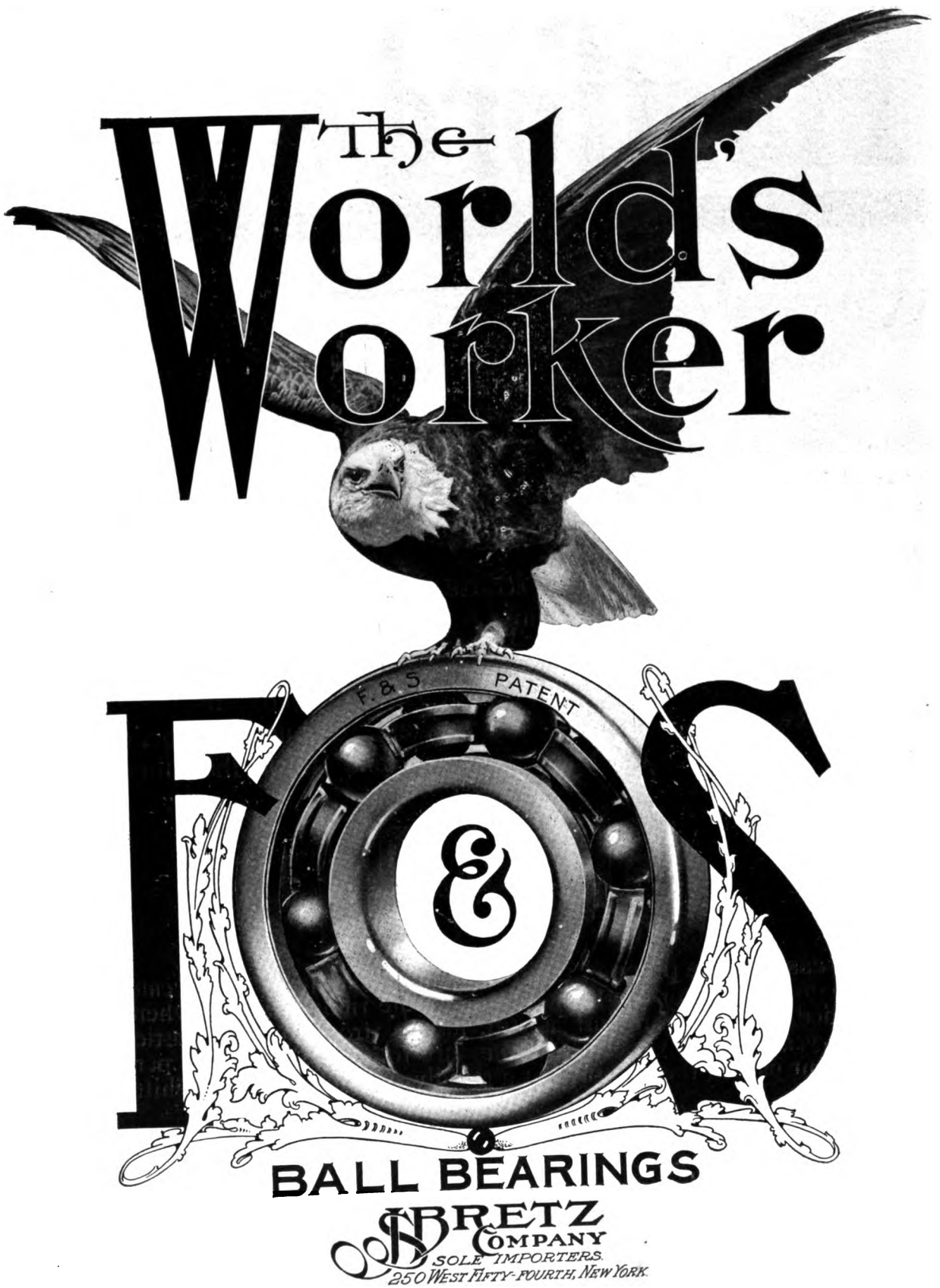
In the shops where Hartford Cone Clutches are made there is a better equipment of special machinery for the manufacturer of cone clutches than in any other we know of. We have always specialized in cone clutches and our men have been trained in this particular kind of work.



Standard Hartford Cone Clutch Unit Complete with Universals. This is the Type Clutch We Have Specialized in for Years.

Hartford Auto Parts Company
HARTFORD, CONN.

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RESILIENT? YES!

More resilient than wood wheels!

—**because, for equal loads carried, steel truck wheels** have smaller hubs, fewer spokes, and no felloe to check resiliency.

Where medium to heavy loads are concerned the characteristics of built-up wood wheel construction require that the spokes be made so short and thick that their resiliency is lost.

SHELDON
STEEL WHEELS

are cast in one piece of the toughest crucible steel. They cannot shrink, rot, or work loose. They are ribbed exactly where needed, and they are just as stiff, just as strong, just as elastic, next year and the year after as they are today. They are a permanent part of the chassis, not a rapidly deteriorating makeshift.

Allow us to quote on your axle, spring and steel wheel requirements.

SHELDON AXLE COMPANY
WILKES-BARRE, PA.

CHICAGO BRANCH
68 East 12th St.

SAN FRANCISCO BRANCH
444 Market St.

DETROIT BRANCH
1225 Woodward Ave.

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interest we can only hope that the law makers heeded the advice of those who are in the best position to understand just what such legistation would mean to a most important industry.

Kelly-Springfield Record.

Of historical interest to the American industry is the three-ton Kelly truck pictured on this page, which has traveled more than 21,000 miles and according to the owner is still going strong. This chassis contains one of the first water cooled engines built by the Kelly-Springfield Motor Truck Co., of Springfield, Ohio. Before it was sold to its present owner it was put through a strenuous factory and road test, aggregating 18,000 miles. It was then taken down and, the builders tell us, there was not the slightest sign of wear visible anywhere. The truck was then reassembled and sold to the Wagner Company, in whose service it has covered 3,000 miles more.

Ajax Not to Drop Mileage Guarantee.

In response to many inquiries the Ajax-Grieb Rubber Company recently announced.



A Kelly truck, which has made an excellent record for long distance traveling, having more than 21,000 miles to its credit. See note on this page.

COVERT

This 3 ton Kelly Truck was driven 21,000 miles. 18,000 as a factory test car and then 3,000 miles in the hands of the present owners.

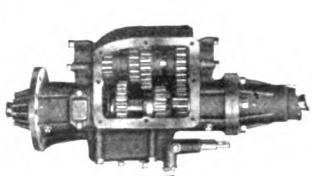
A stock model "K" Covert Transmission has taken the strains and stresses of this 21,000 miles of hard work.

In long, hard service of this kind the transmission receives more strenuous usage than any other mechanical part of the car.

It certainly speaks well for the design, material and workmanship. The Covert Transmission has not shown any sign of wear in all this service.

This is only one instance of the service given by the thousands of Covert Transmissions in use today.

If your transmission equipment has caused you trouble, be on the safe and sure side. Covert Transmissions will end your worries.



Covert Motor Vehicle Company

Sales Office: Ford Building, Detroit, Mich.

Factory: Lockport, N. Y.

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On Account of

INCREASED CAPACITY

We Are Now In Position to

Offer Lower Prices

on

High Grade
Automobile Springs

Prices Quoted on Application

The Lewis Spring and Axle Co.
Jackson, Michigan

Digitized by Google

LEWIS QUALITY

AUTOMOBILE AXLES

¶ We are prepared to show the trade a rear axle, full floating type, of a quality and efficiency that is making engineers, and those who have already seen it, "sit up and take notice."

¶ Until you know what we offer in this axle you will do well to sit tight before closing 1914 contracts. We promise you a new standard of value and the axle will make the promise good.

¶ On request a photograph of this axle will be sent to manufacturers interested, with full information.

The Lewis Spring and Axle Co.

Jackson, Michigan

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SPRINGFIELD
CONVERTIBLE BODIES

Springfield Convertible Bodies are the embodiment of refinement in the matter of lines, material, finish and ease of adjustment.

The runabout convertible body shown here illustrates one extreme of a line that goes on up to the highest grade limousine, landaulet and town car.

Even this faithful reproduction cannot approximate the beauty and convenience of the equipments as they actually appear. They must be seen to be fully appreciated.

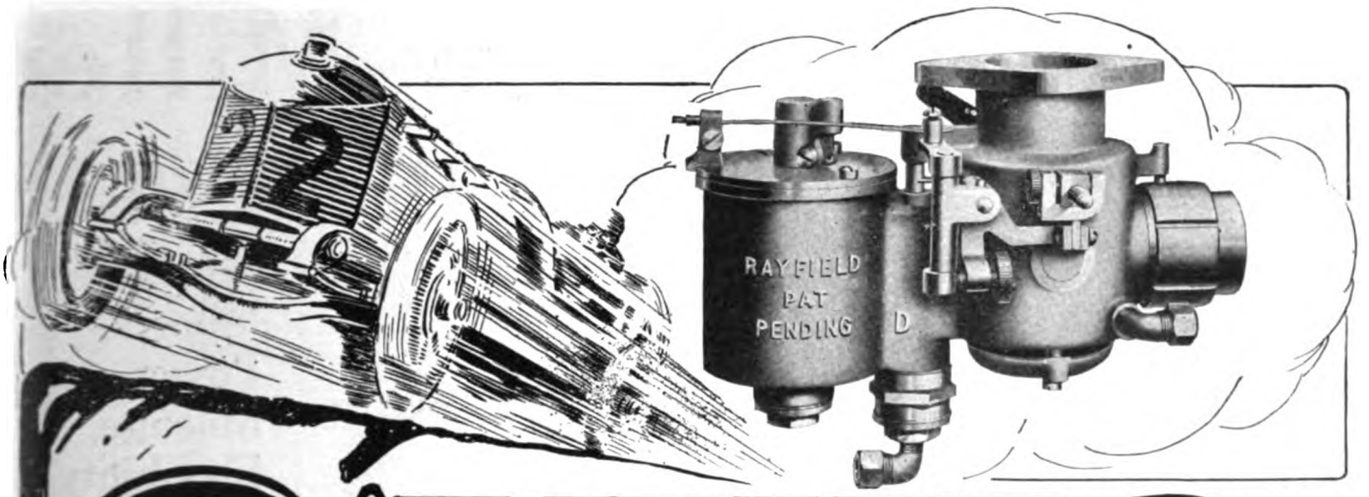
The ease of operation is remarkable; the tops are rapidly raised into position, the doors are opened, the hinged glass swung up into position, the remaining windows are removed from a box in the back of the front seat and buttoned into position, completely enclosing the car in less time than an ordinary top can be erected and the curtains adjusted.

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SPRINGFIELD METAL BODY CO.
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RAYFIELD CARBURETOR

Supreme in the Fierce Test of Racing
Supreme in the Grind of All-Around Service

The "SPEED KINGS"—all of them—KNOW that the RAYFIELD is the fastest carburetor on earth, because THEY USE IT AND WIN RACES, and the Rayfield **wins more races than all other carburetors combined.**

It isn't coincident nor an accident that causes the Rayfield—on any make of car, under all conditions, for every equipment—to consistently, unfailingly demonstrate **positive efficiency—superiority.**

The man who designed it **knew** motor construction, **knew** the possibilities of gasoline combustion, knew the REQUIREMENTS of a carburetor better than anyone else did; and he finally produced a **perfect carburetor**—the RAYFIELD—which gets the **maximum energy out of every atom of gasoline.**

That's **why** it wins races—or throttles down to a snail's pace without a skip.

By getting **all** of the power out of one drop of gasoline, it doesn't have to borrow any power from the second drop; that's why it pushes a car farther on one gallon of gasoline than other carburetors do, all of which means one thing—"More motor car service for less gasoline," and that spells **ECONOMY.**



A thirty-day trial will convince you. It is yours for the asking

Findeisen & Kropf Manufacturing Co.

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Not only are Eisemann magnetos a "sales asset"—but they are the best sort of "service asset" as well.

Unquestionably, the most emphatic endorsement of the real merit of Eisemann products is the adoption of Eisemann ignition by so many leading truck and car manufacturers in this country. Particularly is this true as regards the use of Eisemann ignition on heavy duty trucks.

In this field service counts—your ignition must make good—you must give service. Eisemann magnetos do give service. That's why we say they are a "service asset" as well as a "sales asset."

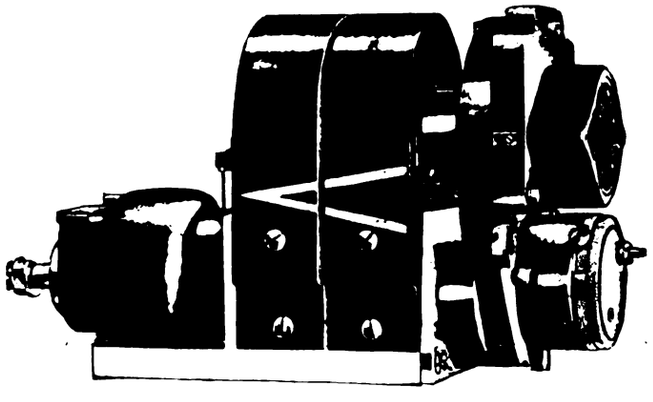
Won't you let us demonstrate the truth of this to you, actually.

THE EISEMANN MAGNETO CO.

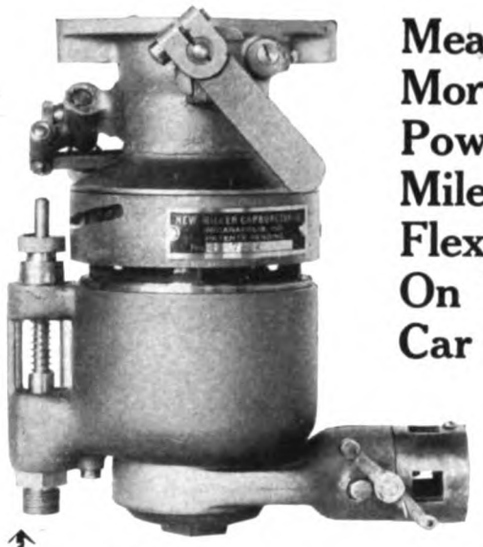
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New Miller Carburetor



Means More Power, Mileage, Flexibility On Your Car

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Takes care of any grade fuel from gasoline to distillate.
Adjusts from seat for all weather conditions.
Throttles down without knocking.
Gives maximum power on low, intermediate and high.
Mechanically adjusted by throttle opening or closing.

The New-Miller Proposition

Once the New-Miller carburetor is set on your motor, no further adjustments are needed. All subsequent changes made necessary by difference in altitude, winter or summer weather, good or bad gasoline, can be made from the seat.

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New-Miller carburetors are manufactured by specially designed machinery, machined to one-thousandth inch, subjected to a rigid inspection, and tested on all types of motors. Every unit in a million of them would be interchangeable.

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A season's use will easily save you fuel and repair expense to pay for a New-Miller and freedom from carburetor troubles on your car. You can prove this for yourself if you will send for the New-Miller Booklet and go over it carefully.

New-Miller Carburetor Co.

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My car is.....

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AN equipment of Weaver Auto Twin-Jacks will save from one to three men's salary in any public garage, repair shop, or auto livery in the country.

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In repairing or overhauling a car to the best advantage, Weaver Auto Twin-Jacks are indispensable. Dismantled cars can be readily shifted around, as desired. And there is no danger of the car falling and injuring the workmen. Absolutely safe, substantial and dependable.

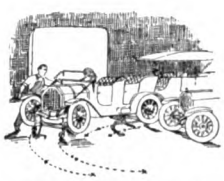
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The casters and lifting mechanism are ball and roller bearing throughout. The heaviest pleasure car can be raised with ease. Lifting leverage of 400 to 1—34-inch wheel base—wheels have 2-inch face—weight of each jack complete, 47 lbs.

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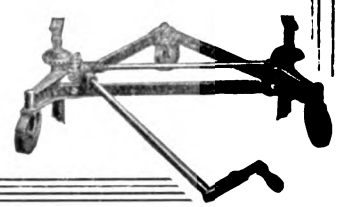
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Probably no other device has done so much to raise the factor of automobile safety as WEED CHAINS. They are the proverbial "ounce of prevention" against skidding, the cause of over ninety per cent of all automobile accidents—*Life Insurance* and *Accident Insurance Companies* strongly endorse them and recommend their use. *Taxicab Companies,* for their own protection, *insist* that their drivers put them on when the streets are wet or slippery.

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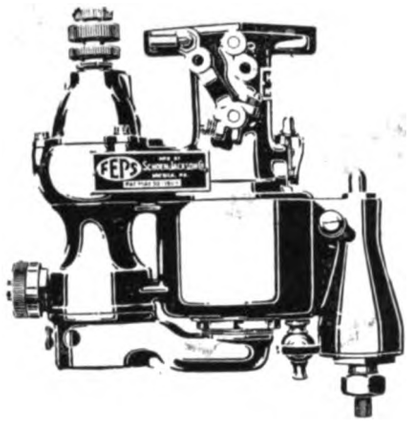
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In this connection we might state that out of over 200 Feps which we have now installed only one has been returned for credit. . . .

Thanking you for your past courtesies and with best wishes for a big year, we beg to remain,

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Baltimore: Carl Spoerer's Sons, 901 S. Carey St.
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may have its advantages from a Congressional standpoint, but PERSONAL INVESTIGATION cannot be surpassed as a means of obtaining a real intimate knowledge of the superior qualities of SPLITDORF SPARK PLUGS.

And SPLITDORF PLUGS will come through any and every personal investigation—no matter how thorough, or how searching—with the unqualified endorsement of: "THE BEST SPARK PLUG ON THE MARKET."

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The Part that Sells the Car—that Sells the Car—that Sells the Car—



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The silent Buda motor does its own talking—and yours.

WISE MANUFACTURERS HAVE BUDA MOTOR FOR THEIR "SILENT SALES MANAGER."

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"The Part That Sells the Car"

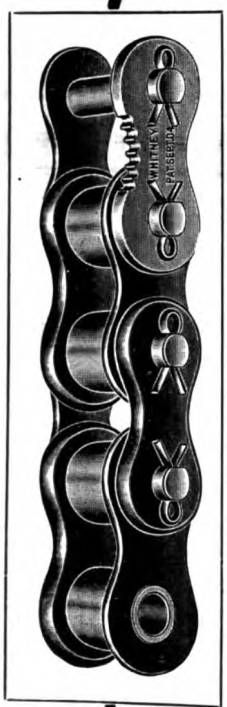
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WE call your attention here to "Whitney" Cotter Detachable Chains as the most practical chains ever offered for motor vehicles. They have made a record for themselves which no other Detachable Type has approached.

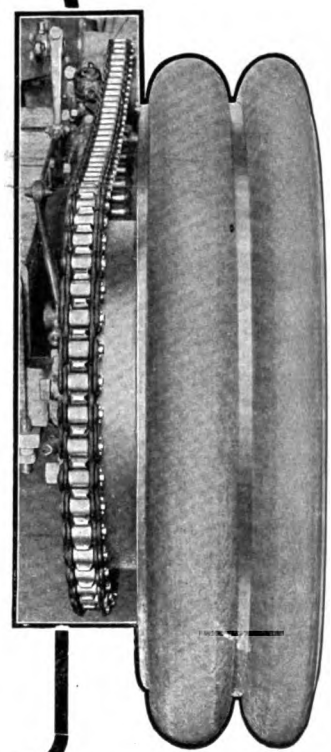
This Cotter Pin feature is so practical and necessary that it calls for little detailed explanation. The illustrations tell their own story, proving that this form of construction is logical and necessary for chain equipped motor vehicles. This Cotter Detachable Chain can be taken apart at any link and lengthened, shortened or repaired without the use of any special tool, as the Cotter Pin can be removed with pliers, screw driver or any sharp pointed instrument. The use of "Whitney" Cotter Detachable Chains assures the builder, owner and driver of commercial vehicles uninterrupted service on account of the ease of repair.

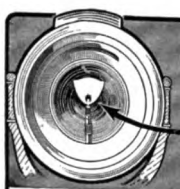
"Whitney" Chains are made from steel best adapted for the purpose, carefully hardened and calculated to resist the most wear, while in the matters of machining and assembling the utmost care is exercised and thorough inspections and tests characterize each process of manufacture. Their future service, however, depends upon the accuracy of sprockets, care, lubrication, alignment and adjustment, for the best chain in existence cannot withstand the evil influence of improper conditions and give best results.

Write for our illustrated catalog which shows top and side views of each size of all Roller chains manufactured by us.

"Whitney" Chains Are Built for Strains

The Whitney Manufacturing Co.
HARTFORD, CONN.





The flame is always just this high when you use

The Prest-O-Lite
Automatic Reducing Valve

With this device attached to your Prest-O-Lite, you do not have to turn the tank valve up or down to get the correct flame in the lamps.

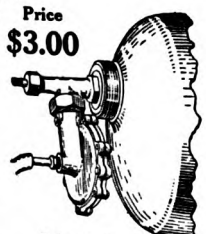
Turn on the gas, light your lamps, and the flame is bound to be just right, without any adjusting.

It pays for itself in gas saved, so its convenience costs you nothing.

Unlike other reducing valves, the Prest-O-Lite Automatic gives the correct gas pressure at all times, whether the tank is full, half full, or nearly empty. It is truly automatic in its action.

Anyone can attach it in less than five minutes.

Price **$3.00**



Your dealer has it or will quickly get it for you. If not, we'll send it to you on receipt of price. Try your dealer first. Every Prest-O-Lite Branch Office has this Automatic Reducing Valve in stock.

The Prest-O-Lite Co.
287 Speedway Indianapolis, Ind.
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Price in Canada, $3.50

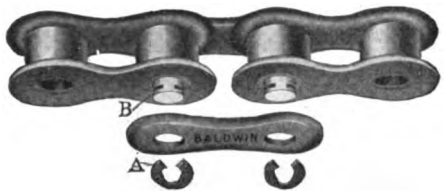
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Universal Tire Pressure Gauge



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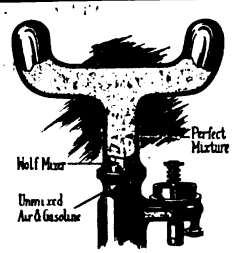
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to prevent the increased cost of Gasoline but you Can cut your consumption

15 to 40% with

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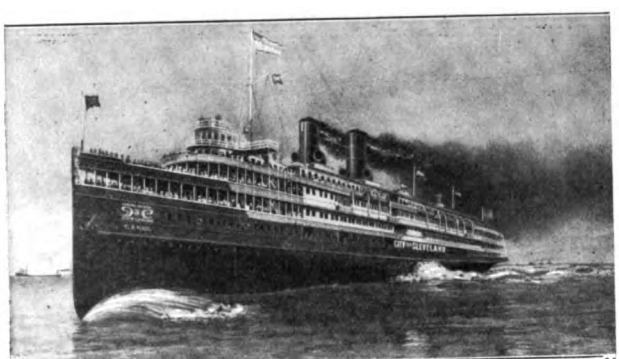
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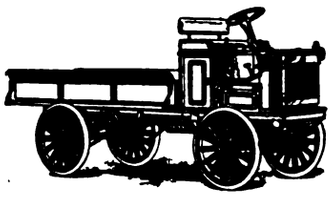
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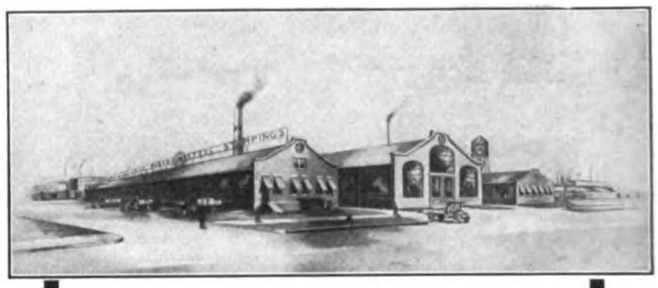
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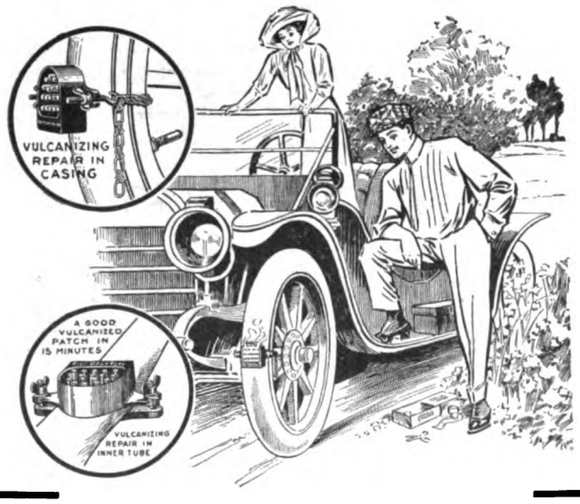
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Universal Vulcanizer

You can repair CASINGS and INNER TUBES anywhere in 10 minutes, good as a Repair Shop can do—and for ONE CENT.

A PRACTICAL VULCANIZING OUTFIT COMPLETE, with enough repair gum to make 40 patches. Weighs 3 pounds, can be carried in tool box.

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If your dealer can't supply you, we will send it prepaid. Guaranteed satisfactory or money refunded.

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THE Trade is hereby notified that the United States Patent Office has finally rendered judgment in favor of the Adamson Manufacturing Company, of East Palestine, Ohio, and on April 1st, 1913, granted to them Letters Patent No 1,057,911, covering in broadest terms all types of casing and tube vulcanizers involving the principle of the Adamson Vulcanizers now on the market

You are hereby warned that we will rigorously enforce our exclusive right to this type of vulcanizer by prompt action in the Federal Courts, and you are hereby warned against selling or offering for sale any infringing device.

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Manufacturers of Automobile Accessories and Specialties
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Eight Annual Convention of the Federation of Trade Press Associations in the United States at the Hotel Astor, New York, Sept. 18, 19, 20, 1913

Two sessions will be held daily. There will be editorial, circulation, advertising and publishing symposiums under competent leaders. Many of the leading editors, business managers, buyers and sellers of advertising, and authorities on modern merchandising methods will take part. On Friday afternoon, September 19, there will be a mass meeting with addresses by representative business and professional men, on subjects of timely interest to editors, publishers and advertisers. Distinguished guests and worth-while speakers will be at the annual banquet, which will be made a memorable social occasion. No matter what may be your connection with the trade journal field, if you are interested in the idea of business promotion through trade press efficiency, if you believe in business papers for business men, you will be welcome at all sessions.

Full information may be obtained from

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WM. H. UKERS, Chairman, 79 Wall Street, New York

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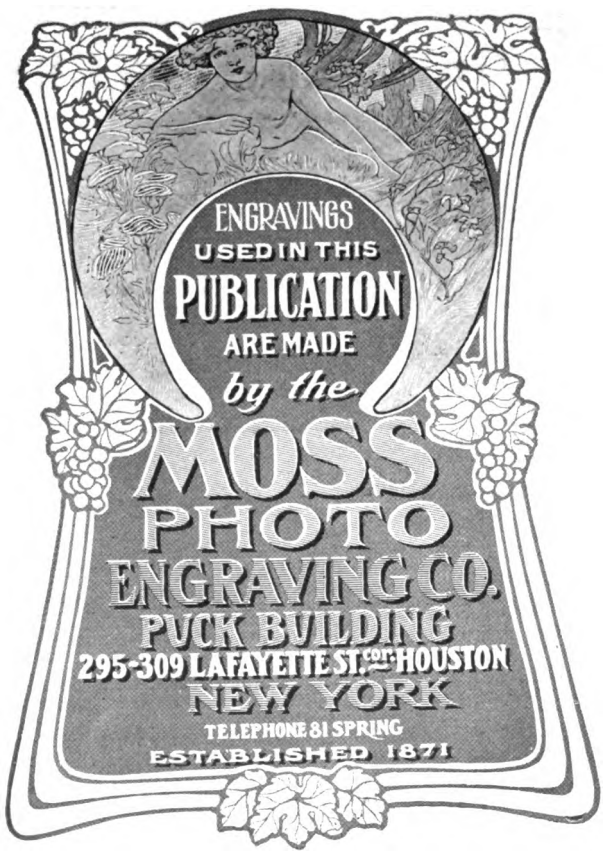


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Will pay for itself many times over in the reduced wear-and-tear on transmissions and differentials which its use brings about. It combines the highest lubricating value with the longest life as a lubricant—the flake graphite gives the lasting quality. You should have the book "Lubricating the Motor," No. 23.

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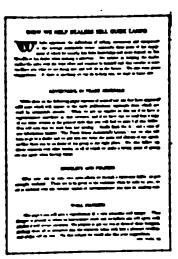


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Guide
MOTOR LAMPS.

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ARE superior because they are made right—because they are built by the best workmen and of the best materials obtainable in the world—because they are made and sold by a Reliable Company, and because reliable service is afforded each Purchaser. One, two, three and five ton sizes. Bodies built at our factory to meet the demands of every line of trade. Fifty page Catalogue sent free on request. Some territory still open for reliable dealers only.

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A Direct Unit of Turin Plant

The F-I-A-T Factory at Poughkeepsie, New York, is a direct unit of the F-I-A-T plant at Turin, Italy. It was established three years ago to bring direct factory service to FIAT owners in America and to eliminate the payment of 45 per cent import duty, thereby making possible the purchase of FIAT Superiority at American Prices.

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If you have a Ford car in your garage, you have a neat profit awaiting you.

You can retail our seat-cover at a price that will put it on every car of every one of your Ford customers.

And at the same time your profit is decidedly attractive.

The fit is guaranteed and you can count on high-grade workmanship and immediate delivery.

For our mutual benefit let us suggest that you drop us a postal for our agent's proposition—it's GOOD.

We also make a complete line of tops and trimmings.

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SILENT—SIMPLIFIED—STURDY

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cost very little more than castings. They are vastly superior and less expensive in the end.

WE ARE SPECIALISTS

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from special analysis steel.

Send prints of parts you will need in

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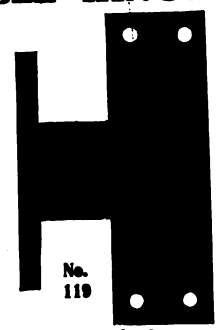
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OUR No. 119 concealed Automobile Door Hinge, in addition to the "Soss" interlocking construction, insures long wear, absolute rigidity and a perfectly smooth swinging door.

Made in two sections, the hinge can be easily attached and detached. Water will not reach the wood of the body through the hinge.

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The **Atwater Kent Ignition System**



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Any Kind Every Kind Stock, or to Blue Print **Rims** **Clincher Q. D. Demountable Channels**

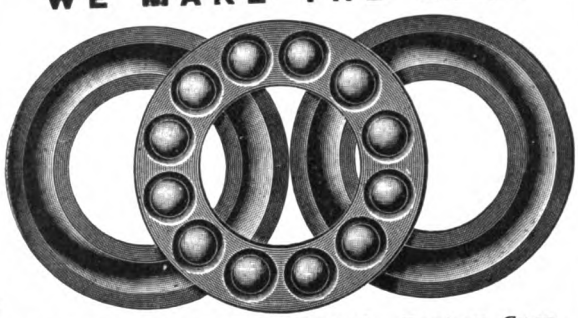
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United States Tires are good tires

They cut down tire bills

IDEAL STEEL WHEEL (RESILIENT)

STRENGTH COMFORT BEAUTY ECONOMY

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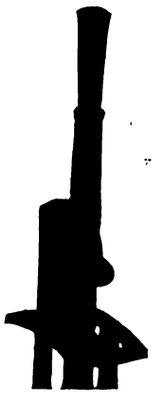
If you are in a position to handle our wheels and to give demonstrations of them we can offer you a liberal selling contract with exclusive territory and no competition. Ours is a free-trial, money back proposition to the consumer. For the dealer it means quick turns of the small amount of money invested and unusually attractive profits.

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The Hercules automatically locks the transmission lever in neutral.

Guaranteed thief-proof and easily attached to any car.

Consumer advertising and good profit make it a real live proposition for the dealer.

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Makers of "The Auto Lock That Lex"
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Out Gears of Quality
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NEW PROCESS GEAR CORPORATION
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The thoroughly dependable tire is the one which possesses no possible weak spots. The fact that Kelly-Springfield Tires are made by hand subjects them to an individual scrutiny which has never yet permitted a weak spot to get by.

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Infallible Starting

WARD LEONARD ELECTRIC CO.
BRONXVILLE N.Y.

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ZENITH



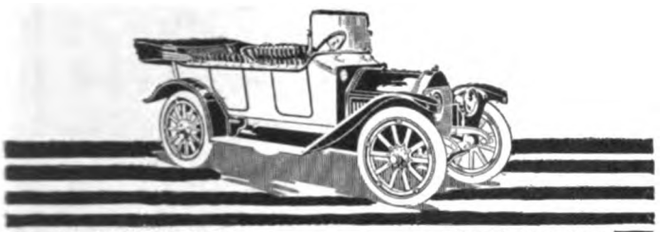
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Long Stroke Motor, Big Roomy English Body
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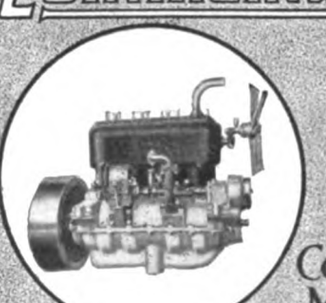
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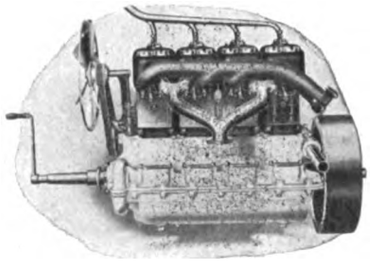
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Learn what the

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THE UNIVERSAL CAR

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Reduces Gasoline Bills 25% to 40%!

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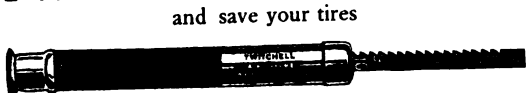
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Largest Exclusive Spark Plug Manufacturers in the World.

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For Efficiency Get a

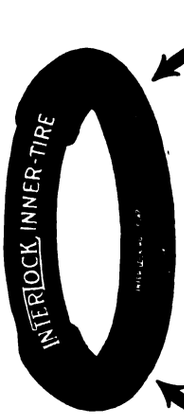
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enables you to crank your engine from the seat. It operates mechanically—no electricity, no gas, no air.

It is perfect in construction; simple and easy to operate.

No danger from back-firing. No possible harm to the motor.

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It is guaranteed free from mechanical defects for sixty days and is low priced. Write us for further information.

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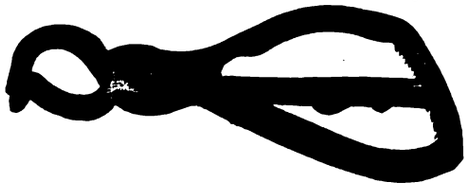
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Makes any car start easier in cold weather; adds 10 to 40% to power and mileage. Simple, easily installed, guaranteed effective on any motor. Get details and price.

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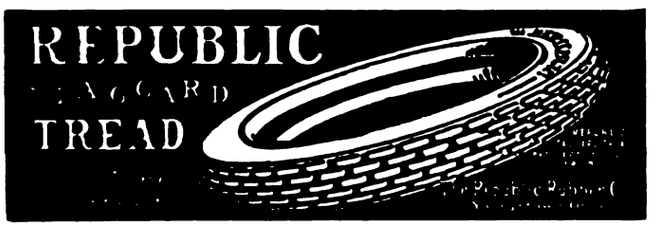
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METZ "Twenty-Two" $495

Stylish Roadster, completely equipped, fully guaranteed. 4-cylinder 22½ H.P. water cooled motor, Bosch magneto, artillery wheels, best quality clincher tires. Makes 5 to 50 miles per hour, 28 to 32 miles on 1 gallon of gasoline. Great hill climber. You can secure EXCLUSIVE SALE in your territory. Write for Book "L."

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is exceedingly easy-riding and comfortable. The straight line low slung body, deep upholstery and luxurious appointments of the Sturdy STUTZ give it that aristocratic design which lends dignity and quality to a high class motor car. Write today for advance booklet A-15 Sturdy STUTZ Announcement.

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Final and crowning achievement of R. E. Olds, pioneer designer of Autos. A standard size 30 to 35 horsepower four-cylinder car of modern refinements, priced at only $1,095.

R. M. OWEN & CO., General Sales Agents.

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Woodworth Treads

will help you increase your business while benefitting your customers. We will send any responsible dealer a pair on 30 days' trial. Write now. Good Agents wanted for unoccupied territory.

LEATHER TIRE GOODS CO., Niagara Falls, N. Y.

CHAMPION SPARK PLUGS

Over 70% of all the cars made in America today are factory-equipped with specially designed **Champion Spark Plugs.**

Select from our complete line the **Champion Spark Plug** best fitted for your motor car or motor boat.

For Sale by Dealers the World Over

CHAMPION SPARK PLUG CO., 106 UPTON AVENUE TOLEDO, OHIO



BOYCE MOTOMETER PAT'S PEND'G

Know the Heat of Your Motor While Driving!

MOTOMETER CO., Inc., 904 U. S. Rubber Building. B'dway & 58th St., N. Y.; Chicago Branch, 1322 Michigan Ave.

S.U. CARBURETOR

really fool-proof—absolutely automatic—only one moving part.

THE SIMMS MAGNETO CO. 1790 Broadway, New York City Factory, Bloomfield, N. J.

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MOTZ Cushion Tires

For Pleasure Cars and Light Delivery Cars

Send for Booklet 58

A—Shows *double*, notched treads.
B—Shows undercut sides.
C—Shows slantwise bridges.
D—Shows absorbing means when passing over an obstruction.

The Motz Tire and Rubber Co.

Executive Office: Akron, Ohio

Service Stations in All Principal Cities

HESS AXLES

Now standard on fourteen makes of America's leading cars and still growing. Send for blue-prints and specifications—or consult our engineering department.

HESS SPRING AND AXLE COMPANY
CARTHAGE, OHIO

Schafer Ball Bearings

Famous for Their Durability

BARTHEL & DALY, 42 Broadway, New York

AJAX EXTRA HEAVY NON-SKID TIRES

The Only Non-Skid Tires Guaranteed for 5000 Miles

AJAX-GRIEB RUBBER COMPANY
General Offices: 1796 Broadway, New York
Factories: Trenton, N. J. Branches in Principal Cities

As a Warm Hand Wheel Dealer

You will reap generous profits from easily made sales all over your territory. Every car owner who drives in winter will want this device as soon as he sees it. Write for Details.

The Warm Hand Steering Wheel Co. 527 Fifth Ave. New York

The Ford Water Circulator

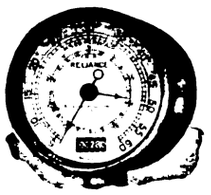
forces the water from radiator through cylinder water jacket, maintaining rapid circulation when car is in motion. Write for descriptive matter if you handle Ford cars.

THE FULTON-McCUTCHAN CO.
1146 Michigan Ave. CHICAGO, ILL.

POLSON Quality Windshields

Auxiliary Seats, Bumpers and Gas Starters

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RELIANCE

"The Speedometer of Quality"

Special features that eliminate speedometer troubles. Send for the booklet.

RELIANCE SPEEDOMETER COMPANY
134 Eliot St., Boston, Mass.

QUICK SALES—BIG PROFITS FOR DEALERS

Here is an accessory that will not stay on the shelf. It sells on sight.

MARVEL STEAM VULCANIZER

Automatic, therefore safe for rubber. Uses alcohol or gasoline. Low priced. Send for sales plan and sample Vulcanizer.

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AKRON, OHIO.

This name on Automobile Tires and Rubber Accessories signifies inherent qualities of material and workmanship that insure the maximum of service at the minimum of expense. (673)

THE GOODYEAR TIRE & RUBBER COMPANY, Akron, Ohio



Magneto Plugs coax maximum power out of engine.
EMIL GROSSMAN COMPANY, Mfr., New York and Detroit



For anything in sheet metal that goes onto an automobile ask the

HAYES MANUFACTURING COMPANY
DETROIT, MICHIGAN
Largest Users of Sheet Metal in the World

Mosler Spit Fire Plugs ARE THE BEST
A. R. MOSLER & CO.,
P.O. BOX "M" MT. VERNON, N.Y.



COMBINATION LATHE DOGS
SOMETHING NEW

ADJUSTABLE from 2-6 inches to 2-8 inches for turning crank-shaft, cams and eccentrics. Saves their cost on the first job. Every garage and repair man should have a pair. Send for circular How to Turn a Crank Shaft. Price from 2-6 inch $5.00 a pair, from 2-8 inch $10.00 a pair. Send direct. Don't delay. You can't tell how soon you may need them. Mfg. by
STRASBURGER MFG. CO., 815 Hearst Bldg., CHICAGO



AMERICAN KUSHION KORE

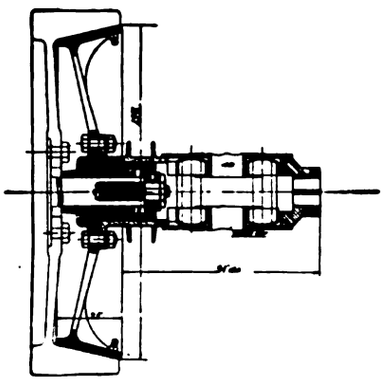
A tire filler 10 to 20 per cent. lighter than any other tire filler. A big proposition for dealers who are on the alert for more and better business. Write for details.

AMERICAN KUSHION KORE TIRE CO.
Buffalo, New York

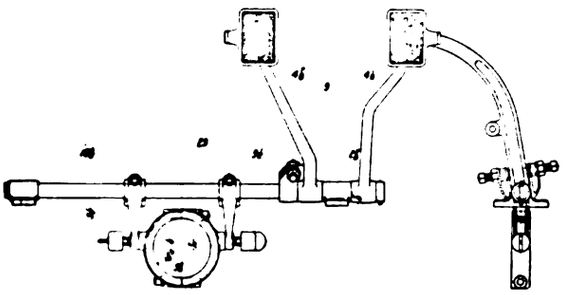
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1 or 1000

WE have been through the mill in the auto parts business and are willing to have you profit by our experience. Our line is comprehensive and contains not a single weak point either in design or material. We are shipping small quantities from stock, special parts to your designs, in a week or ten days. Put your proposition up to us.

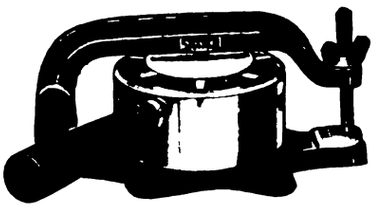


Cone clutch with double universals and designed to permit easy disassembling. Length shaft optional. This type clutch furnished for any vehicle from 30 to 60 H. P.



Clutch and brake pedal assembly fitted with either bronze or ball bearing throwout yoke. Pedals, forgings or castings of various lengths to suit your requirements.

THE OTTO KONIGSLOW MFG. CO.
3510 Perkins Avenue
CLEVELAND, OHIO
Detroit Office: J. H. GOULD, 1202 Majestic Bldg.



DEALERS: A million motorists will have tire trouble in 1913. There is a demand for a **reliable**, inexpensive vulcanizer that can be used by anyone, anywhere—a vulcanizer that will mend tube punctures as perfectly as the most elaborate plant.

VUL-KIT VULCANIZER REPAIR KIT $2

The only inexpensive vulcanizer that actually **vulcanizes** a repair clear through because it is the only one in which the vulcanizing temperature is maintained long enough to cure the raw rubber. Its ever-present fuel, gasoline, is converted into a gas by the patent generator which distributes the flame over the vulcanizing surface at just the right intensity.

Other exclusive Shaler features are a handle that is cool enough to permit moving the vulcanizer the moment the repair is finished, asbestos plate inlaid in tube shelf to retain heat and prevent pinching tube, and universal clamp insuring even pressure to all parts of a repair.

A Real SHALER Vulcanizer

Not an experiment, but the product of the largest exclusive vulcanizer manufacturers in the world. Sold under the Shaler guarantee which has made the Shaler line of vulcanizers for motorists and repairmen the standard throughout the auto industry.

Get our trade proposition

Write today and get full details and trade prices on this indispensable accessory. Sooner or later every motorist will get a VUL-KIT from someone.

C. A. Shaler Co.
425 10th St. Waupun, Wis.

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For Sale—Wants—Exchange

15 cents per line of six words, cash with order: — In capitals, 25 cents per line —

A market place where Dealers, Jobbers and Manufacturers may buy, sell or trade used cars, parts and appliances and where help or situations may be secured at a nominal cost.

PROPOSALS FOR MOTOR TRUCKS. Army Building, Whitehall St., New York City, May 7, 1913.—Sealed proposals, in triplicate, will be received here until 10 A. M., July 7, 1913, and then opened, for supply of from one to ten Motor Trucks. Information upon application. M. GRAY ZALINSKI, Depot Q. M.

MAILING LISTS AND STATISTICS
Owners or dealers; any state, county, city; weekly and monthly supplements at lowest prices. Special lists of Electrics, Trucks, Fords, Studebaker, Overland, etc.
MOTOR LIST CO. OF AMERICA
230 News Arcade, Des Moines, Iowa.

1911 CADILLAC, 5 passenger, completely equipped; excellent condition; quick sale. McCORMICK'S, 448 5th Ave., Brooklyn, N. Y.

AUTOMOBILES AND PARTS—Largest stock ever known. Prices on anything. PROGRESS BROKERAGE CO., 527 Grant St., Buffalo, N. Y.

FOR SALE OR EXCHANGE—A large quantity of Dahl automobile tire filler. C. KIRTLANDT, Box 313, Mobile, Ala.

WANTED—4 Autos in exchange for House Cleaning Wagon now in Milwaukee. Write Box 4, Portage, Wis.

COMPLETE list New York State registration, 50 cents per thousand names. OWNERS, AUTO LIST CO., Albany, N. Y.

I HAVE the best auto specialty on the market, and with the assistance of some one with an automobile and $500 cash we can make a young fortune. AUTOMOBILE SPECIALTY, 71 3rd Ave., N. Y.

RE-GROUND
We carry a complete stock of re-ground bearings for immediate exchange. 'Phone Col. 5889. AHLBERG BEARING CO., "The Oldest Concern in the Business," Room 1116, 1790 Broadway, New York City. 2636 Michigan Ave., Chicago. 805 Woodward Ave., Detroit.

FOR SALE—One of the largest and best equipped garages in New Jersey, doing a large repair and storage business, also a big hacking and trucking business. Fully equipped shop. This is a bargain for a hustler; it is now making big money; terms easy. Box 260, care Motor World.

FOR SALE—Six brand new Thomas radiators, 14 red inner tubes, 4 electric automobile lamps, electric drill, cylinder grinder and motor; also dynamo; 2,000 pet cocks, grease and oil cups; must sell immediately. KLEIN, 236 Canal St., New York City.

FOR SALE—A 5-ton Mack truck and a 6½-ton Saurer truck, both in first-class condition and can be seen in operation; will be sold at a bargain. Apply to CENEDELLA & CO., Hollywood Ave., Crestwood, N. Y.

PRACTICAL automobile mechanic, eight years' experience overhauling all makes, wants repair work at your own garage; $3.50 day; furnish my own tools, guarantee first-class work; small jobs wanted; before buying a used car or truck let me examine it for you. Address ARTHUR WOOD, 195 Linden St., Brooklyn, N. Y.

PEERLESS AUTO TOP DRESSING.
For mohair, duck and canvas automobile tops and curtains. Waterproofs leaking tops. Makes old tops a uniform color. Ask your dealer.
THE COLUMBUS VARNISH CO.,
Columbus, Ohio.

PEERLESS LEATHER TOP DRESSING.
For leather, rubber and pantasote tops and curtains. Softens the top and renews the finish. Ask your dealer.
THE COLUMBUS VARNISH CO.,
Columbus, Ohio.

FIRST-CLASS automobile man wants partner with some money to open garage and shop in good automobile town; have had twelve years' experience; can deliver the goods. Address POST OFFICE BOX 319, Fort Worth, Texas.

AUTOMOBILE CYLINDERS reground, new pistons and rings fitted. Garage air compressors. CAST IRON BRAZING CO., Manchester, N. H.

STODDARD-DAYTON, 1911, 40 H.P., in good order. Price, $900.00. J. RYAN, 109 Reade St., New York City.



An ad. like this will cost you $1.20 for each insertion.

These columns offer you an opportunity to appeal to an audience of 8,000 readers whose merchandising taste is being cultivated

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For Sale—Wants—Exchange

15 cents per line of six words, cash with order: — In capitals, 25 cents per line —

A market place where Dealers, Jobbers and Manufacturers may buy, sell or trade used cars, parts and appliances and where help or situations may be secured at a nominal cost.

WILL maintain your car for $5.00 per month. Gasolene or electric automobiles. V. G. PHILBRICK, 2415 Michigan Ave., Chicago, Ill.

FOR SALE—Seven-passenger limousine, 48 Pierce-Arrow; also touring body; $3,000. J. F. ALLEN, 111 Broadway, New York.

PEERLESS BACK AND CUSHION DRESSING.

For leather seats and cushions. Dries hard on clean leather. The color does not come off. Renews the finish. Ask your dealer.

THE COLUMBUS VARNISH CO.,
Columbus, Ohio.

BROKEN CRANKSHAFTS, cylinders, crankcases, flywheels, gear teeth, pistons, perfectly welded and machined ready to replace. Guaranteed and references. Machinery up to 5 tons welded. ATLAS WELDING WORKS, 74-76-78 Irving St., Rahway, N. J.

FORD OWNERS—You can increase the life of your tires 25% by fitting your car with Wire Wheels. Will also improve riding qualities of your car and make it up-to-date. Write, RACINE AUTO PARTS CO., Box 86, Racine Jct., Wis.

ARE YOU in need of any additional help in any department of your business? Are you out of employment or looking for a better connection? Have you second-hand apparatus of any kind or do you want to buy second-hand material? Have you a factory site for sale or do you want to buy one? If so, use the Want and For Sale column of the Motor World. Seven words to the line, fifteen cents a line. Advertisements can be inserted over a number when it is desired and identity of the advertiser will be kept confidential.

ENGINE, Zust, 45 H.P., magneto, carburetor, A1 condition, $250. FOXLACHER, 81 West 50th St., New York. Plaza 870.

$10,000.00 will purchase two-story modern garage with complete equipment and stock in Atlantic City. Last year's receipts, $60,000. Price includes $5,000 equity in property, Ford agency and two-year Government contract. Summer rush started. HENKELMAN'S GARAGE, 2213-15 Pacific Ave., Atlantic City, N. J.

PEERLESS EXTRA FINE BLACK BAKING JAPAN.

For baking on all metals, no primer, one coat covering solid. Bakes to a high gloss finish in 2 to 3 hours. Can also bake to a semi-gloss and dull finish. Ask your dealer.

THE COLUMBUS VARNISH CO.,
Columbus, Ohio.

MERCEDES AUTOMOBILES, all models bought, rebuilt and sold.
MERCEDES IMPORTED PARTS.
Eastern agents for the famous ZENITH CARBURETOR.

MERCEDES REPAIR CO.,
159 E. 54th St.
'Phones, Plaza 5100-5101.

PEERLESS EXTRA FINE BLACK JAPAN.

For all metal, lamps, radiators, fenders, etc. Air dries in 10 to 12 hours with a high gloss finish. Elastic, tough, durable. No primer; one coat covers solid. Ask your dealer.

THE COLUMBUS VARNISH CO.,
Columbus, Ohio.

RESPONSIBLE sales agents will find the Hartford Electric Starting and Lighting System an easy selling proposition. Territory now being assigned. Particulars on request. HARTFORD SUSPENSION CO., 156 Bay St., Jersey City, N. J.

SACRIFICE SALE—62nd St., near Ave. N, Brooklyn, N. Y.—$4,250.—Eight model one-family homes, taken under foreclosure, building on plots 27 x 100; containing 8 rooms, tile bath, hardwood trim, steam heat, electric lights, parquet floors; richly decorated, with laundry in cellar; built to sell at $5,500; are offered at $4,250, being less than cost of construction, on easy terms. Will take automobile as part payment. To reach property take Culver line to Ave. N station. L. W. PEASE, 2370 62nd St.; 'phone 7226 Main.

PEERLESS LINING DYE.

For dyeing the inside of all cloth tops and curtains. Makes faded, stained and grease spotted linings a black and uniform color. Ask your dealer.

THE COLUMBUS VARNISH CO.,
Columbus, Ohio.

weekly to the highest degree by our articles on "Wide Awake Merchandising." Look at the cost as shown in the margins.

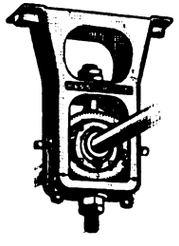
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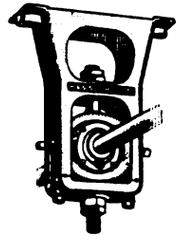
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BALL ~ BEARINGS

HB DWF





The Hess-Bright Manufacturing Company

Pioneers in the introduction of Annular Ball Bearings

Most extensive resources and plants in existence devoted exclusively to ball bearing manufacture. Enlarging and improving facilities, product and capacity for distribution.

Main Offices and Plant No. 2 on line of Penna. R. R. to New York

No. 59 East Erie Avenue, Philadelphia, Pa.

Stores for Retail Distribution:

PHILADELPHIA	NEW YORK	CHICAGO
666 North Broad Street	1974 Broadway	1800 Michigan Avenue



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9 OF EVERY TEN CARS in use today -- costing $2500 and more—carry Klaxons.

57 car makers—including the makers of every high-grade car in America — regularly equip with them.

200,000 Klaxon users know the Klaxon is essential to motoring safety.

26 large cities today require the use of a signal producing an *"abrupt note, sufficiently loud to be heard under all conditions of traffic."*

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Studebaker

The Selling Power back of the Studebaker Cars

NO Studebaker dealer has to introduce his goods. Almost everywhere the name STUDEBAKER is familiarly known and trusted.

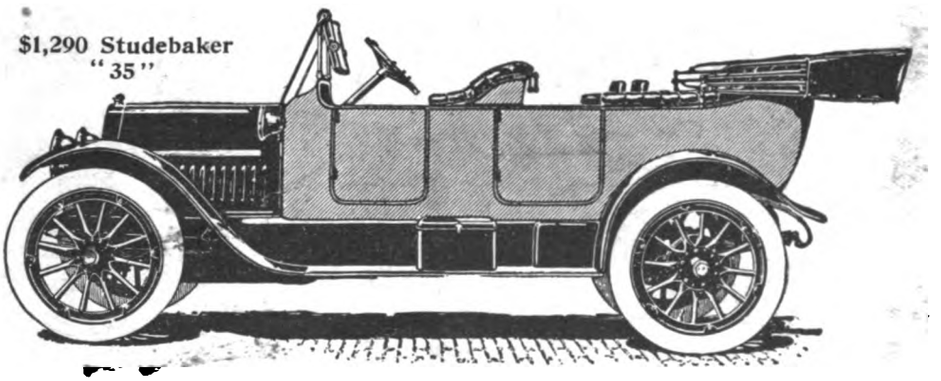
The road between dealer and buyer is absolutely straight and clear. Studebaker dealers frequently do not even have to demonstrate their cars. They are selling a standard article of well known quality.

The selling power back of such a demand is tremendous.

If it were humanly possible for a new car to be put on the market today equal to a Studebaker car in price and quality, the Studebaker car, nevertheless, would sell over it nine cases out of ten.

That is what a well-known reputation earns.

And that is the reason, too, why a contract to sell Studebaker cars will always be sought for. The dealer's market is more responsive, his work easier and his profits far more certain.



THREE CARS

$885 Studebaker "25" $1290 Studebaker "35" $1550 Studebaker "SIX"

Completely Equipped f. o. b. Detroit

STUDEBAKER - - - Detroit, Mich.

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MOTOR WORLD

A Trade Paper Giving the World's Motor News

Vol. XXXVI
No. 2

New York, July 3, 1913

Ten cents a copy
Two dollars a year

The ELECTRIC DISCO System
STARTING—LIGHTING

Motor Car Builders Won't Make This Costly Mistake Again

Some makers of motor cars had to learn **by experience** that it doesn't pay to equip with just any electric starter.

They won't make such an expensive mistake again.

Henceforth they will look into this Electric Starter Proposition **carefully** and give it the consideration it deserves.

They will perceive that, even though it costs them more to put on the very finest electric starter, they save money by doing it.

The manufacturer who equips with the **Electric Disco** doesn't have to hire an army of mechanical experts to travel around the country fixing his customers' cars.

For the **Electric Disco** not only works perfectly when new, but **keeps on** delivering satisfaction.

A number of the leading manufacturers have closed with The Disco Company for equipment for their 1914 cars. Watch for the 1914 announcements of motor builders and note the preponderance of cars that will be equipped with the Disco for 1914. They all appreciate, after having had some experience, the value of using this device.

Spinning vs. Turning

Observe the Electric Disco on your friend's **car.** Note how it **spins** his motor.

It doesn't merely turn over the engine. It makes the engine fairly "whiz." Gives an immediate speed of 150 R. P. M.

Think what that spinning means when your motor is dead and the oil is stiff. There's no delay nor wait. The very **moment** you press the button you are **under way.**

A Book for You

We have a handsome, new Book on Electric Starters. We are sending a copy of it to every motorist we know. Over 15,000 motorists have already sent for it and have been able to immediately appreciate the supremacy of the Disco and their demand to the manufacturer and dealer is working a tremendous effect on the equipment for 1914.

If you haven't received your copy, it is because you have not sent your address. Please do so at once. We will forward the Book by return mail.

THE DISCO COMPANY

715 Dodge Building **Detroit, U. S. A.**

Published Weekly by the Motor World Publishing Company, 1600 Broadway, New Yo

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New "MacFarlan Six" Fitted with Truffault-Hartford Shock Absorbers

Pursuing a policy of long standing, the MacFarlan Automobile Company has again decided on Truffault-Hartford Shock Absorbers for their new model.

This model—soon to make its appearance in the showrooms of MacFarlan dealers—possesses many new features, including a "T" head motor of remarkable power, a self-starter, electric lights, extra large tires, and full elliptic springs on the rear with Truffault-Hartford Shock Absorbers both front and rear.

The use of full elliptic springs on a car of the MacFarlan's size and weight would be quite out of the question without the supplemental use of Truffault-Hartfords.

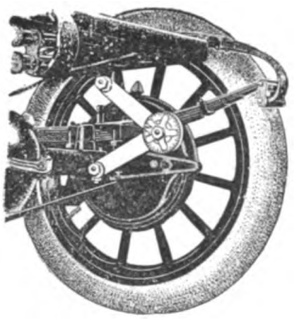
Truffault-Hartfords supply the necessary restraint and reinforcement for this type of spring, and give the MacFarlan a riding ease justly comparable with the smooth running of a Palace Pullman car.

Attachable to any car without marring its appearance, the

Truffault-Hartford
SHOCK ABSORBER
"The Pioneer Shock Absorber"

adds to its value by making riding comfortable under all road conditions.

The MacFarlan Company is one of the pioneers in six cylinder car construction and a concern of sixty years' standing in horse-drawn vehicle manufacture. As such, its re-adoption of the Truffault-Hartford, year after year, is strong evidence of the superior merit of this device.



Write for Catalog

Insist Upon Truffault-Hartfords on Your New Car

HARTFORD SUSPENSION CO.

EDWARD V. HARTFORD, Pres. **Office and Works: Jersey City, N. J.**

Manufacturers of Hartford Electric Starting and Lighting System

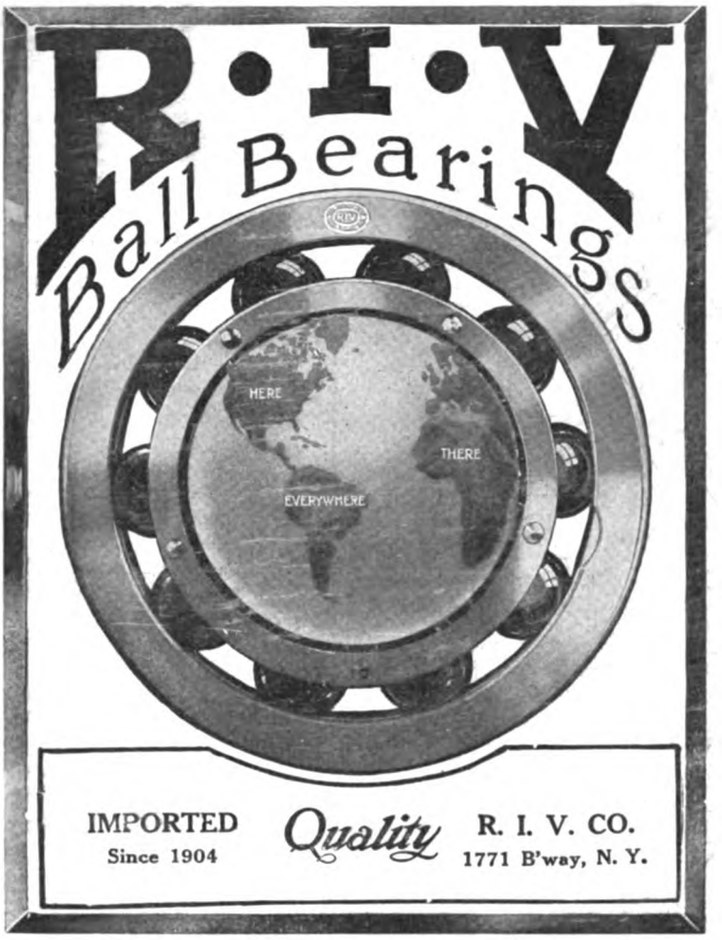
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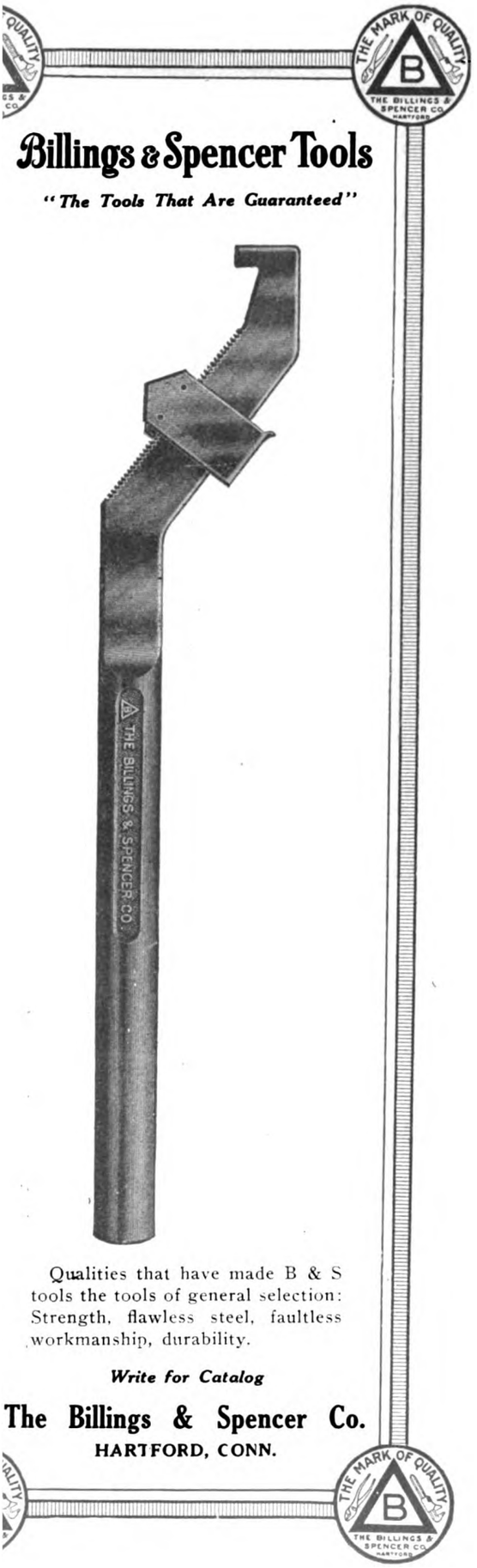


Quality Cars Are Equipped With Them

As a man is known by the company he keeps so is an automobile known by the equipment it carries. Quality cars are equipped with R. I. V. quality ball bearings.

R. I. V. COMPANY

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Billings & Spencer Tools

"The Tools That Are Guaranteed"

Qualities that have made B & S tools the tools of general selection: Strength, flawless steel, faultless workmanship, durability.

Write for Catalog

The Billings & Spencer Co.

HARTFORD, CONN.

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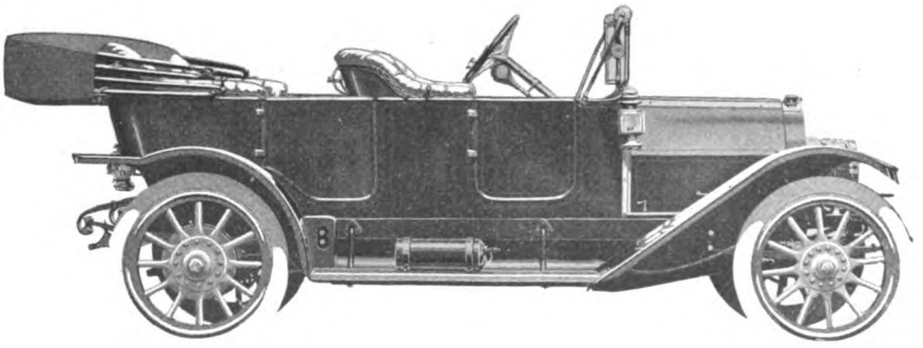
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MOTOR WORLD

Vol. XXXVI New York, U. S. A., Thursday, July 3, 1913 No. 2

WINTON ADOPTS LEFT DRIVE; ADVANCES PRICE SLIGHTLY

Pioneer Manufacturer Makes Many Changes in Car but None of a Radical Nature—New Price $3,250.

Hereafter, all Winton cars will have the steering wheel at the left side, instead of the right, with the control levers in the center of the footboard, affording right hand control. Coincident with this change and the adoption of several other new features of a less radical nature, including an increase in the engine size from 4½ x 5 to 4½ x 5½, the price of the touring models has been advanced from $3,000 to $3,250. It goes almost without the saying that all Wintons will be "sixes," as has been the case for the past five years.

Although the change in the position of the steering wheel alters slightly the general appearance of the car, its lines remain practically unaltered, except that the usual side lamps have been eliminated, their place being taken by small auxiliary bulbs placed within the head lamps, and that the door handles and hinges have been concealed. Other changes in construction which have been made, while none the less important, scarcely are visible. Thus, for instance, the distinctive Winton method of obtaining pressure for the air engine starter from the engine cylinders has been discarded and a four-cylinder Kellogg air pump substituted for it; also, a complete Gray & Davis electric lighting system has been substituted for the Prest-O-Lite tank and storage battery formerly included in the equipment. Another important change in the chassis lies in the elimination of the radius rods; their function now is performed by the rear springs; at the same time, the front springs have been lengthened and the frame strengthened to increase the factor of safety. To increase stability the frame and all it carries has been lowered, and the effort required to operate the car has been reduced by increasing the clutch release.

Other alterations include the installation of the speedometer, clock, ignition switches, etc., on a cowl board instead of on the dashboard proper and the employment of a primer, to facilitate starting which is operated from the cowl board. By way of enhancing appearance, the radiator has been made of German silver and all the exposed metal parts are nickeled. Equipment has been increased by the addition of a mohair top with side curtains, rain-vision windshield, Klaxon horn (beneath the engine hood), Warner speedometer, and a Waltham eight-day clock, all of which is in addition to the usual demountable rims, bulb horn, tools, etc.

Court Refuses to Approve Warren Sale.

When the assets of the bankrupt Warren Motor Car Co., of Detroit, were offered for sale by the receiver on Thursday last, 26th ult., W. C. Rands, of the Rands Mfg. Co., offered $104,600 for the real estate, two factory buildings and the machinery therein. As his was the best bid, Rands was congratulating himself on securing a bargain but when the sale came before the court for confirmation it was found that there was something illegal in the transaction and the court, therefore, refused its approval. Efforts are being made to untangle the knot and it is possible that a decision may be rendered today as to whether Rands's offer shall be amended or the sale of the property reopened. If Rands gets the plant, it is his purpose to move in and greatly enlarge his business of manufacturing windshields and tops and also to increase the capital of his company.

Durant-Dort May "Go Into" Cars.

The Durant-Dort Co., of Flint, Mich., which is one of the biggest producers of low-priced buggies in the world, is contemplating the manufacture of motor cars. The company already makes a low-priced motor wagon.

NEW YORK GARAGEMEN RUN AFOUL OF MORE OBSTACLES

Can't Maintain Establishments Adjoining Schools, Theaters or "Movies" —Test Case Results Adversely but Will Be Appealed.

If a decision which was rendered this week in the Supreme Court for New York county is upheld by the higher tribunal, metropolitan garagemen whose businesses represent something like $4,000,000 will be seriously affected if not entirely forced out of business; the decision took the form of a refusal to grant to James McIntosh permission to operate his garage at 130 West 102d street on the grounds that it comes within the prohibitions of Section 370 of Article 11 of the city ordinances, which went into effect January 3, 1912. The ordinance provides that no garage shall be operated within 50 feet of a schoolhouse, theater or other building used for such purposes, including moving picture shows.

McIntosh has been in business for ten years, and while he says he is not worrying as to the outcome, the court's decision in effect says that he must move or go out of business, for he is within 50 feet of a schoolhouse, which is prohibited by the ordinance; he had a permit when he started in business, but was obliged to get a new one under the new ordinance and his application has been on its way through the court for about a year. Now it is denied the New York Garage Association will carry the matter to an appeal; Theodore K. McCarthy, the association's attorney, states that it is hoped to bring about a more just arrangement regarding garage permits.

"As it is now," he said, "there is nothing to prevent a moving picture man opening up a show within 50 feet of a garage and then, when the garageman wants a new permit he can't get one. The garage may represent an investment of $75,000 or $80,-

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000 and the moving picture show but $5,000, but as the ordinance now stands the moving picture show can force the garageman out. We also contend that a garage across the street from a schoolhouse is more dangerous, so far as a fire panic is concerned, than one within 50 feet but separated by another building, but the ordinance rules out the one separated by another structure and will permit one directly across the street, provided it is without the 50-foot limit.

"It is our contention that the Fire Commissioner should have the power to grant these permits and should investigate each case and decide upon the separate conditions. The construction of the garage, its fire walls and other features, should be considered, whereas the 50-foot rule is the sole guide now and is very arbitrary and unjust."

Louis J. Joscelyn, president of the New York Garage Association and the operator of the largest garage of its kind in New York, said the association would contest the matter to the end and endeavor to secure a more satisfactory ordinance.

This case is regarded as a test case, and few other garagemen are likely to be disturbed until the matter is adjudicated.

The ordinance in question also provides that no garage—storage of volatile inflammable oils is the way it expresses it—shall be permitted in an apartment, tenement house or hotel; there are a number of salesrooms so located in New York, but these are not affected, since they do not store gasolene as does a garage.

The Garage association also expects to obtain a decision next week in its fight against the rule requiring the installation of a gasolene separator, a device designed to prevent gasolene and oil from getting into the sewers; the garagemen claim these devices are very expensive and do not do the work for which they were designed.

Ford Charges Price-Cutter with Contempt.

Growing out of the suit instituted by the Ford Motor Co. against the Union Motor Sales Co., of Cincinnati, Ohio, Ohio, for infringement of Ford patents by cutting the price of Ford cars, O. D. Noble has been charged with contempt of court in that he violated the temporary injunction obtained by the Ford company, which restrained not only the Union Sales company but everyone connected with it.

Noble, according to the Ford charges, was connected with the Union Sales establishment, but, nevertheless, is continuing the price-cutting tactics. In his own defense, Noble swears that he is conducting an independent business of his own and that he is in no way related to the Union Sales company or a party to its litigation.

"SUPPLY AND DEMAND" CUT "GAS" CENT IN NEW JERSEY

Reasons Which "Accounted for" Rapid Rise in Price Now Used to Explain Reduction—No Relief in New York, However.

Despite the fact that there is no evidence that the supply has increased, while there is every evidence that the demand has increased, those good old excuses which were worn threadbare during the period when the price of automobile fuel was advanced from 9 to 17 cents, the Standard Oil Co. of New Jersey has reduced the price of gasolene in that State from 16 to 15 cents within the last month. The reduction was made in two drops of one-half cent each, the latest reduction being made last week.

Fifteen cents is the Newark price and does not hold throughout the State, since under a new law in New Jersey the price is governed by the distance of the customer from the point where the price is made. However, the reduction applies to all the varying rates. Thus, in the neighborhood of Hoboken the price is now about 15¼ cents a gallon, where before the drop it was 16¼ cents or thereabouts. When asked the reason for the decrease in price the Standard Oil answer was "market conditions," which corresponds in a measure to the "supply and demand" argument when prices went upward.

Although New York City is "just across the river" from Hoboken, the "market conditions" evidently are not of the same sort, as no reduction has been made, the price to garagemen still standing at 17 cents.

Miller Rubber Doubles its Capital.

The Miller Rubber Co., of Akron, Ohio, has increased its capital stock from $1,000,000 to $2,000,000. Of the added $1,000,000, $500,000 is represented by 7 per cent. cumulative preferred stock, which will be first offered to the stockholders, and after they have exercised their option the unsold portion will be offered for public subscription. The additional $500,000 common stock will be held in the treasury. The new money will be utilized in the enlargement of the business, which enlargement is visible in the form of new buildings which will double the Miller floor space and production.

Knight-Argyll Litigation is Ended.

Although at one time it was intimated that the Knight & Kilbourne Patents Co. was not entirely satisfied with the decision and subsequent appeal granted Argylls, Ltd., in the suit instituted by the Knight interests for alleged infringement of the Knight patents by the Argyll company, and that it might carry the case to the court of last resort, the litigation has been amicably settled out of court. By mutual agreement, the Knight & Kilbourne company has accepted as final the judgment of the Court of Appeals, rendered in April last and holding the Argyll engine to be no infringement of the original Knight patents.

Day Utility Finds Support in Spokane.

After indifferent existence in Detroit, the Day Utility Car Co., of that city, has found financial support in Spokane, Wash., and is making ready to remove, bag and baggage, to the other side of the continent. The company undertook to build a combination pleasure and commercial car, but made very slight headway, not merely in the actual marketing of cars but in the sale of its stock, which several months since was offered to the public in glowing terms. It is stated that removal to Spokane is the direct result of an investigation in Detroit conducted by a committee representing the Spokane Chamber of Commerce.

Croxton Must Pay Croxton-Keeton Note.

Owing to the fact that Herbert A. Croxton endorsed a 30 days' note for the Croxton-Keeton Motor Car Co., of Massillon, Ohio, June 25, 1910, judgment was taken against him this week in the new York City Court by the Grant-Lees Gear Co., successor to the Grant-Lees Machine Co., of Cleveland, Ohio. The face of the note was $817 and but $135.48 was paid, leaving a balance of $681.52. The judgment, including costs, is for $835.15.

Rate on Frames Declared Excessive.

In an unreported opinion, the Interstate Commerce Commission has held that a rate of 1½ times first class applied to shipments of iron automobile frames from Plattsburg, N. Y., to Portland, Ore., is unreasonable and excessive to the extent that it exceeds the second class rate, which is to become effective on or before August 15; the latter rate is to be kept in effect for a period of not less than two years from that date.

"Vulcan" Swinehart to Make Truck Tires.

C. A. Swinehart, one-time sales manager of the Swinehart Tire & Rubber Co., of Akron, Ohio, has acquired an interest in the Vulcan Rubber Co., of Erie, Pa., of which he has assumed the general management. Heretofore the company has produced only mechanical rubber goods and inner tubes, but it is its immediate purpose to take up the manufacture of the truck tire designed by Swinehart himself.

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NO INDICATION OF LET-UP IN EXPANSION OF EXPORTS

Record for May Discloses Half-Million Gain in Cars, Parts, Engines and Tires—Imports Continue to Fall Off.

The export of cars, parts, engines and tires to foreign countries during the month of May increased nearly a half million dollars over the exports during the same month of the preceding year, the total value of these products exported in the later May was $4,227,309 and in May of 1912 it was $3,752,734, an advance of $474,575, or 10.6 per cent.

While details as to the destinations of the various items are not given in the preliminary report just issued by the Federal statisticians, the exports of cars alone showed in total $192,371; the shipments in May, 1913, were 3,036 cars valued at $3,-[illegible]189 and in May, 1912, 3,009 cars with a valuation of $2,963,818. The gain in number was 27. Of the 3,036 cars shipped in the latter month 141 were trucks and 2,895 pleasure vehicles.

Parts, not including engines and tires, exported in May, 1912, were valued at $448,-[illegible]72 and in May, 1913, $537,511, an increase of $88,539; this brings the total of cars and parts to $3,412,790 for May, 1912, and to $3,692,700, a gain of $279,910. Also, for a period of 11 months ending with May, 1913, the value of cars and parts exported was $25,512,[illegible]83, and for 11 months ending with May of the previous year, $23,179,285, an increase of $5,333,480. For these same periods the number of cars shipped was [illegible]932 and 19,816, an increase of 3,316.

During May of 1912 the value of the tires sold in foreign countries was $272,-[illegible]77 and in May of 1913 $396,816, an advance of $124,409. Engines also showed an increase; in May, 1912, there were exported 72 valued at $67,627, and in May, 1913, 978 valued at $137,795, a gain of 407 in number and $70,168 in value.

Imports of cars continued to decrease; May of 1912 showed imports of 76 cars valued at $165,759, while in the following May, that of 1913, the figures had dropped to 42 cars valued at $113,737, losses of 34 in number and $52,022 in value. Parts acted in a contrary manner, however, gaining $5,-[illegible]43, the figures for May, 1912, and May, 1913, being respectively $21,493 and $26,-[illegible]36.

More Engines Coming from Indianapolis.

The Smelser Engine & Machine Works, which was incorporated several months since under Indiana laws with an authorized capital of $50,000, has acquired a four-acre site in the Mars Hill district of Indianapolis on which it will at once erect a brick and concrete building for the manufacture of gasolene engines and appliances, including transmissions. Most of the devices are the invention of James M. Smelser, vice-president of the company. Its other officers are: E. G. Ritchie, vice-president; Guy M. Churchill, secretary; Noble H. Whible, treasurer. These officials with D. M. Parry, T. C. Rees and H. A. Debaut comprise the board of directors.

No Ford Prices Until October Next.

Because of the appearance and promised appearance of many so-called cyclecars and small automobiles at less than Ford prices, there has been much speculation as to whether the Ford Motor Co. would not do something in that direction that would make the world "take notice." But as a matter of course the Ford people are not worrying, and inquiry at headquarters in Detroit brought the response that Ford prices are not settled until October and that there is not likely to be any deviation from the rule this year, if, indeed, there will be any change of price.

Cameron Acquires Factory in Connecticut.

The reorganized Cameron Mfg. Co., of Beverley, Mass., has finally acquired a plant in West Haven, Conn., and intends to resume the manufacture of Cameron cars in that city on or about August 1. It is stated that incidental to its removal the company's capital will be increased to $1,000,000 and the residents of New Haven be given an opportunity to purchase thereof.

Stearns Sails for European Vacation.

Frank B. Stearns, president of the F. B. Stearns Co., of Cleveland, sailed Tuesday last, 1st inst., on the Rotterdam for a midsummer vacation. Mrs. Stearns accompanied him. Before sailing, Mr. Stearns let fall that, despite some rumors to the contrary, prices of the Stearns-Knight cars will remain unchanged.

Poultry Hatchers to Produce Trucks.

After two years of experimentation, the Cycle Hatcher Co., of Elmira, N. Y., which manufactures incubators and the like, is making ready to place on the market a motor truck; it will employ a four-cylinder 4½ x 5 block motor giving 40 to 50 horsepower at 1,200 revolutions.

Lozier Opens Office in Detroit.

H. A. Lozier, as president of the Motor Patents Co., has opened an office in the Dime Savings Bank Building in Detroit. He will, however, retain his interests in the Lozier Motor Co.

ANY STAMPS NOW USABLE ON ANY KIND OF MAIL MATTER

Regular Stamps Good on Parcel Post and Parcel Post Stamps Good on Other Mail—C. O. D. Regulations and Other Rules.

Any postage stamp is now good on parcel post packages, and parcel post stamps are good on all classes of mail, according to an order of Postmaster General Burleson which went into effect Tuesday of this week, July 1; heretofore ordinary stamps have not been good on parcel post packages and parcel post stamps have not been good on letters. The new arrangement will render a convenience to those using the service in that any postage at hand will be usable on any class of mail matter.

There also went into effect July 1, as was stated in the Motor World would be the case, the collect-on-delivery rule, whereby goods may be sent and their price collected and remitted to the sender by the post office of delivery. There are, however, certain regulations to be observed under Section 66 of the parcel post regulations.

The sender of a mailable parcel on which the postage is fully prepaid may have the price of the article and the charges thereon collected from the addressee on payment of a fee of 10 cents in stamps affixed, provided the amount collected does not exceed $100. Such a parcel will be insured against loss, without additional charge, in an amount equivalent to its value, but not to exceed $50. The sender of a collect-on-delivery parcel will receive a recipt showing the office and date of the mailing, the number of the parcel, and the amount due him.

C. O. D. parcels will be accepted for mailing only at a money order post office and when addressed to a money order post office. If a C. O. D. parcel is received at a non-money order post office the postmaster will notify the office of mailing of the amount of postage required for its return. The postmaster at the office of mailing will ascertain from the sender whether he desires the parcel returned or delivered without collection of the charges. If the sender notifies him in writing that the parcel may be delivered without collecting the charges, he will attach the order to the office coupon and notify the postmaster at the office of address to that effect.

A C. O. D. parcel will be treated as ordinary mail matter until it reaches the office of address, where, on payment of charges, it will be delivered to the addressee, or, unless otherwise directed by the addressee, to the person, firm, or the corporation

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in whose care it is addressed, or to any responsible person to whom the addressee's mail is ordinarily delivered.

The addressee will not be permitted to examine the contents of a C. O. D. parcel until it has been receipted for and all charges paid. A parcel may be refused when it is tendered for delivery, but after delivery has been effected it cannot be returned on account of dissatisfaction with the contents or the amount collected. The Post Office Department will not be responsible for errors made by senders in stating the collection charges or for any misunderstanding between the senders and addressees regarding the character of the contents of parcels.

The cumbersome and inconvenient parcel post stamp regulations were adopted to give the government a line on the volume of matter carried by the new department, and now that this information has shown the popularity of the parcel post the stamps will be discontinued, it is stated, when the present supply is exhausted, which time is not distant.

Shepherd-Oakland Must Stay in Court.

The United States District Court for the Southern District of New York this week denied the application of Irving R. Shepherd to have remanded to the Supreme Court for New York county his action against the Oakland Motor Car Co., of Pontiac, Mich., in which he asks $15,000 for damages for injuries sustained when the flywheel of an Oakland car burst during the time when he and his brother were Oakland representatives in the metropolis. Shepherd's suit was instituted in the Supreme Court, but was removed to the United States court at the request of the Oakland company.

Cash Payment Proved to be not Cash.

Because a check for $500 which the Motor Trading Co., of 206 West 76th street, New York City, gave to the G. P. Warner Coal & Supply Co. as the first payment on a used truck went to protest the coal company this week secured a judgment for $538.91; the complainant states that the Motor Trading Co. was to pay $2,300 for the truck, $500 down and $1,800 in three installments. The trading company, which deals in used cars; formerly was located at 254 West 50th street, but recently moved to its present location.

"Owners' Association" Owes for 'Phone.

Judgment for $22.26 was filed this week in the New York county clerk's office by the New York Telephone Co. against the Automobile Owners' Association; the latter has an office at 27 William street, New York City.

POISONING EUROPEAN MIND AGAINST THE AMERICAN CAR

More About the Contemptible Campaign Being Waged in Germany—Anti-American Printed Matter Regularly Circulated.

"At least some of the European manufacturers of motor cars are spending more valuable time in trying to belittle American-made automobiles than in improving their own production facilities to meet the so-called invasion in the logical way," is the declaration made by Kurt Isserstedt, distributer of Overland automobiles for the German empire, in amplification of his views on the subject expressed in last week's Motor World. "Not only are they wasting their time in these efforts, but, I am sorry to say, they are playing the game unfairly. It is this underhand competition which has made it so difficult for the really meritorious American car to gain a foothold on the continent, though, judging from the success with which the Overland has met in Germany during the past year, better times are coming.

"One of the most difficult features of the European opposition with which we American representatives in Germany have to contend is the regular issuance of false statements by Continental motor car manufacturers concerning our cars. Once a month, or oftener, every motor car dealer and owner in the German Empire receives, through the mail, a printed circular which is devoted entirely to criticism of the American-made automobiles. To a great extent these criticisms are not only unfair, but intentionally and deliberately untrue. Americans cannot realize to what lengths European competitors will go in order to create a distrust of American cars.

"I have in mind a particularly vicious attack, all the more unjust because there was absolutely no foundation of truth for it. It was an illustration in one of the printed circulars, showing a man bending a motor crankshaft almost double, across his knee, with apparently but little effort. While it was not so labeled, the reading matter accompanying led the unthinking reader to the belief that the illustration was made from an actual occurrence, that the crankshaft was taken from a medium-priced American car and was found so poor in quality and construction that a man of ordinary strength actually bent it across his knee.

"Of course, to the person who knows anything at all of metals or motor cars, the illustration was ridiculous, for the poorest crankshaft ever made could not be so handled. But on the European who, perhaps, already has a deep-seated prejudice against all things American, this 'knock,' as you call it here, makes a far deeper impression in Europe than one can believe would be possible.

"And this case is only one of hundreds of like attempts made to belittle the American-made car. Even though some are so plainly impossible as to be absurd, they will have their evil effect."

Weed Enjoins a Gripwell Chain Seller.

James H. Simms, who used to sell supplies and accessories on New York's "Automobile Row," apparently isn't worrying over the outcome of a suit which the Weed Chain Tire Grip Co. filed against him over a year ago for alleged infringement of the Parsons patent, No. 723,299, in selling Gripwell grips; relying upon his lack of concern and the fact that he put in no defense, the Weed company this week in the United States District Court for the Southern District of New York secured a decree pro confesso, which means judgment by default. Simms's present whereabouts are unknown. The Gripwell tire chains were manufactured by the H. Channon Co., of Chicago, which the Weed company defeated in a suit which was carried to the United States Circuit Court of Appeals, decision having been rendered but a few months ago.

Body Builders Beat White Second Time.

Litigation which followed the sale of a town car body to the White Co., of Cleveland, Ohio, December 29, 1911, by the Manhattan Top & Body Co., of New York City, terminated this week in a verdict in favor of the body builders upon the second trial of the action in the New York City Court. The White Co. refused to pay for the body on the grounds that it was defective and set up a counterclaim of $1,430. The body builders claimed $850 for the body, $5.50 for labor and interest.

The first trial—about a year ago—resulted in a verdict of $871.25 for the body builders, but a new trial was secured. The verdict of this week was for $926.40, but the addition of costs brings the total of the judgment to $1,109.46.

Prest-O-Lite Sues Dealer in Wichita.

The Prest-O-Lite Co. has secured a preliminary injunction in the Federal court for the District of Kansas against Charles O. Hoover and Ernest Craig, proprietors of the Headlight Gas Co., of Wichita, also $5,000 is asked for refilling Prest-O-Lite tanks; it is charged that the defendants refilled and sold Prest-O-Lite tanks in violation of the Federal trade mark law forbidding such practice.

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The Week's Incorporations

Raleigh, N. C.—Murchiso Garage & Machine Co., under North Carolina laws; to sell, handle and repair motor cars, etc.

Greensburg, Pa.—Greensburg Transportation Co., under Pennsylvania laws; authorized capital, $10,000; to operate a motor passenger line.

Columbus, O.—Columbus Electric Vehicle Co., under Ohio laws; authorized capital, $50,000. Corporators—O. H. Perry, D. N. Perry, W. G. Neff.

Toledo, Ohio—Engel Auto Parts & Motor Mfg. Co., under Ohio laws; authorized capital, $75,000. Corporators—W. P. Engel, F. T. Betts, Samuel N. Rapp.

Waterloo, S. C.—Colleton Automobile Repair Co., under South Carolina laws; authorized capital, $1,000. Corporators—H. E. Savage and M. O. Dunning.

Wilmington, Del.—Easy Starter & Speeder Co., under Delaware laws; authorized capital, $50,000. Corporators—H. E. Latter, W. J. Maloney, O. J. Richard.

Louisville, Ky.—W. P. Smith Auto Repair Co., under Kentucky laws; authorized capital, $10,000. Corporators—W. P. Smith, W. R. Schmidt, G. H. Schmidt, Phil A. Beck.

Bremen, O.—Bremen Garage Co., under Ohio laws; authorized capital, $10,000; to conduct a garage. Corporators—Albert E. Godfrey, Edward A. Hufford, Arthur D. Hufford.

Indianapolis, Ind.—Auto Drive & Parts Co., under Indiana laws; authorized capital, $100,000; to manufacture motor accessories. Corporators—J. J. Kennedy, J. J. Kelly, L. D. Beutin.

Mt. Vernon, N. Y.—Jaeger Rotary Valve Motor Co., under New York laws; authorized capital, $40,000. Corporators—Max Jaeger, Jacob Norden, William Cronenberg, all of Mount Vernon.

Glassport, Pa.—Pleasure Auto Safety-Disk Co., under Pennsylvania laws; authorized capital, $150,000. Corporators—M. M. Edmundson, T. M. Gealey, Clairton; H. L. Norwood, Pittsburgh.

Brooklyn, N. Y.—D. & R. Storage Battery Co., under New York laws; authorized capital, $100,000. Corporators—Adolph F. Lucker, Joseph E. Reid, Rudolph Drambourgh, all of 969 Kent avenue.

Chicago, Ill.—Gray Pneumatic Gear Shift Co., under Illinois laws; authorized capital, $1,000,000; to manufacture and deal in motor cars, etc. Corporators—Forrest E. Marsh, O. C. Cleave, Edward H. Gray.

Nashville, Tenn.—Williams Automobile Transmission Co., under Tennessee laws; authorized capital, $100,000. Corporators—Benjamin S. Williams, James S. Frazer, Thomas L. Herbert, P. H. Cain, H. H. Campbell.

Indianopilis, Ind.—Merchants' Garage, under Indiana laws; authorized capital, $15,000; to conduct a garage. Corporators—C. S. Shotwell, M. J. McGarr, H. H. Rice, W. A. Atkins, B. D. Christian, C. W. Dicks, C. B. Marshall.

New York, N. Y.—Anthony Auto Repair Co., under New York laws; authorized capital, $10,000. Corporators—Julia Yandrastich, 607 East 83rd street; Florence M. Struckhausen and Henry Struckhausen, both of 452 East 84th street.

New York, N. Y.—Turin Garage & Supply Co., under New York laws; authorized capital, $5,000. Corporators—John F. O'Neil, 503 West 169th street; Frank H. Coyne, 100 North Broadway, Yonkers; Anna Grabsheid, 131 West 142d street.

New York, N. Y.—Demos Auto Repair & Garage Co., under New York laws; authorized capital, $3,000. Corporators—Demos Tsaconas, 618 West 187th street; Gustave A. Gsell, 137 Fifth street, Union Hill, N. J.; James E. Bradley, 210 West 43rd street.

Beaver, Pa.—Economy Electric Co., under Pennsylvania laws; authorized capital, $60,000; to succeed Economy Mfg. Co. and manufacture magnetos, generators and electric lighting equipment for motor cars, etc. Corporators—D. A. Anderson, Sewickley, and others.

New York, N. Y.—Findeisen & Kropf Mfg. Co., under New York laws; authorized capital, $5,000; to manufacture motor cars, aeroplanes, etc. Corporators—F. Findeisen, Berwyn, Ill.; O. F. Kropf, Stratford Place, Chicago, Ill.; Charles A. Riegelman, Woodmere, N. Y.

New York, N. Y.—Dayton Touring Car Co., under New York laws; authorized capital, $2,000; to conduct a motor car business. Corporators — Thomas Luby, 1302 Stebbins avenue; Herbert L. Lindsay, 1219 Wheeler avenue; Frank Cunningham, 141 West 96th street.

How Erwin Would Kill Garage Fires.

J. B. Erwin of Milwaukee, a well-known inventor, has developed a new system of fire protection for garages which, because of its simplicity is expected to make a strong appeal to garagemen. The system makes use of a cypress tank set 8 feet deep in the corner of the building and filled with bicarbonate of soda. A small receptacle filled with sulphuric acid is suspended in the tank so that the fusing of a network of wires in the building precipitates it into the soda, the resulting carbon dioxide or gaseous foam flooding the floors. A demonstration was given last week for the benefit of representatives of the Chicago Board of Fire Underwriters, and was most successful. While the principle is an old one, Erwin has carried it out ingeniously in an entirely new way.

Recent Losses by Fire.

Shreveport, La.—Hoffelfinger Bros., garage destroyed. Loss, $9,000.

Cortez, Fla.—I. C. Grable, garage and contents destroyed. Loss not stated.

Weehawken, N. J.—John Willardson, 80 Oak street, garage destroyed. Loss, $5,000.

Yonkers, N. Y.—J. E. Thompson, 455 North Broadway, garage destroyed. Loss, $4,000.

Fairfield, Iowa — Galither & Holcomb, North Court street, garage damaged. Loss not stated.

Philadelphia, Pa.—Samuel Hoebner, 318 West Highland avenue, garage destroyed. Loss, $12,000.

Changes of Capitalization.

Birmingham, Ala.—Robertson Tire & Auto Co., from $2,000 to $50,000.

Cleveland, O.—Bane-Subers Tire & Rubber Co., from $250,000 to $1,500,000.

Change of Corporate Name.

Norfolk, Va.—Auto Specialty Co. to Auto Puncture Proof Co.

Fort Worth, Tex.—Marrs-Lingo Motor Co. to Detroit Electric & Motor Car Co

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PROMINENT MEN IN TRADE WHO ASSUME NEW DUTIES

Resignations and Promotions That Serve to Place Many Workers in New Places—Few Leave the Industry.

C. M. Tichenor has been appointed sales engineer of Gray & Davis for the territory adjacent to Detroit, in which city he will have his headquarters. Tichenor is one of the veterans of the industry.

Norman H. Halliday has been appointed manager of the International Motor Co.'s New England branch in Boston. Previously he was connected in turn with the Thomas and Packard companies.

L. A. Austin has resigned the general management of the Mais Motor Trusk Co., of Indianapolis. He has no definite plans in mind other than a good rest at his home in Detroit, to which he has removed.

George H. Bryant, advertising manager of the Locomobile Co. of America, has resigned that position to become identified with the Velie Motor Vehicle Co., of Moline, Ill. He will be attached to the advertising department.

Frank E. Chapman, for the last eight years superintendent of the service and repair department of the Maxwell-Newcastle Motor Co., of Newcastle, Ind., has resigned. He will be succeeded by E. A. Richmond, of Detroit, who previously was connected with the Flanders Motor Co.

E. M. Denton, formerly agent for the Chase Motor Truck Co. in Baltimore, Md., has been appointed district manager in place of C. K. Thomas, resigned. For the present he will make St. Louis his headquarters. His territory will comprise the greater part of the Southwest.

W. B. Fewell, successively manager of the Olds branches in St. Louis and Boston, has been promoted to the management of the Oakland Motor Car Co.'s branch in New York. He succeeds George S. Waite, who resigned to join a cyclecar manufacturing enterprise in which he has acquired an interest.

John Guy Monihan, advertising manager of the Premier Motor Mfg. Co., of Indianapolis, has resigned that office to become the assistant director of sales and advertising of the Cole Motor Car Co., of both of which departments Homer McKee is the head. Simultaneously Ed. F. Harris has been promoted to the post of field sales manager of the Cole company.

Horace C. Mills has been appointed manager of the Detroit branch of the Electric Auto Light Co., of Toledo; the branch is located in the Boyer Building in the "automobile capital." Mills has been identified with the automobile ignition business for some 15 years, latterly serving as special representative of the Westinghouse starting, lighting and ignition division.

J. F. Gfrorer has been promoted to the management of the Alco general service department of the American Locomotive Co., with which department he has been connected since its inception. Incidentally, the Alco officials have merged the general service department with the service and branch houses and the dealers' service department, thereby concentrating the work.

Minor Business Troubles.

Elmer E. Woods, of Santa Barbara, Cal., has filed a petition in bankruptcy. He traded as the Auto Tire & Vulcanizing Co.

Louis Zeisler, trading in New York City at 1777 Broadway, as the Excelsior Tire Co., has filed schedules in bankruptcy. His liabilities are $,854 and his assets $2,223.

Cyrus K. Fauver has been appointed receiver for the Militaire Auto Co., of Cleveland, Ohio. Its liabilities are between $15,000 and $20,000, while the assets are considerably less. Despite its title, the company manufactured not cars but motorcycles of radical design.

The United Motor Chicago Co., successor to the old Maxwell-Briscoe Chicago Co. and located at 1735 South Michigan avenue, has filed a petition in bankruptcy. The stockholders at a meeting held June 14 decided that insolvency could not be averted. The assets are $27,175 and the liabilities $106,140.54. W. M. Anthony is president. Accounts receivable constitute nearly the entire assets and the largest debt is $80,258, owed to the old United States Motor Co., of 1790 Broadway, New York City. Other debts are: Maxwell Motor Car Co., of New York, $9,385; National Motor Co., New York, $6,594; Sarah J. Howard estate, Chicago, $5,168.

Fred C. Robie, who was a director of the Excelsior Supply Co., of Chicago, which failed in December, 1911, has filed a petition in bankruptcy as an outgrowth of that transaction. The company's assets paid 47½ per cent. on the dollar, and Robie gave his note for the balance, which makes up the greater portion of his liabilities of $591,805. He schedules his assets at $25,672, which includes his residence at 5757 Woodlawn avenue, on which the Union Trust Co. holds a $25,000 mortgage; his largest creditor is the Corn Exchange National Bank, $90,300. The business of the defunct concern is carried on now at 2200 South Union street under the name Excelsior Motor Mfg. & Supply Co.

WORM DRIVE ADOPTED FOR RAUCH & LANG ELECTRICS

Two Models Have It at Present and All Will Have It Eventually—High Speed Motor Is Retained.

Having demonstrated to its own satisfaction during several years of continual testing that worm gear drive for electric vehicles has certain advantages not possessed by any other method of final drive the Rauch & Lang Carriage Co., of Cleveland, Ohio, has formally adopted worm drive for two of its models which just have been placed on the market; eventually, it is understood, all models will be equipped with worm drive, though for the present the reduction by silent chain and bevel gears will be retained. The worm drive is used on coach model J-4 and brougham model B-4, the former being a five-passenger car in which all passengers face forward, and listing at $3,100 with front drive, and the latter being a four-passenger car with rear lever control, listing at $2,950.

In adopting worm drive for these two models, it has not been found necessary to make any change in the motor except as regards its method of mounting; it remains the same high-speed Rauch & Lang-Hertner motor that always has been used. Under the new arrangement, the propeller shaft is connected directly to the end of the armature shaft through a universal joint; a second universal join on the forward end of the worm shaft permits perfect flexibility. To permit of a straight line drive with the normal complement of passengers, the rear of the motor is tilted slightly upward and the axle correspondingly. The particular advantages of the worm drive are that it decreases noise, permits a smoother drive and the use of a high speed, light motor without the necessity of chain reduction, reduces friction and increases the mileage per charge.

The price of the worm-driven brougham —$2,950—is $50 higher than the price of the corresponding bevel driven car; the price of the coach is the same as that for the corresponding bevel driven car.

Keeton Car to Invade Argentina.

Wm. H. Knox & Co., of Buenos Aires, Argentina, have been appointed agents for the Keeton car in that South American republic. Their first shipment comprised three Keeton cars—two blues and one green. Knox & Co. maintain an office in New York City, but the Keeton agency was secured as the result of a recent visit by Knox to the Keeton factory in Detroit.

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In the RETAIL WORLD

O. E. Bickford plans to build a new garage in Fitchburg, Mass.

E. L. Harbert plans to erect a garage and repair-shop in Altoona, Pa.

P. C. Rodman, of Abilene, Kan., has opened a garage. It is located on 4th street.

M. L. Miller purposes to build a garage in Freeport, Ill. The location is on Exchange street.

The DuBois (Pa.) Garage Co. purposes to build a new garage; it will stand on South Brady street.

Rohlfing & Son, of Elysian, Minn., have sold a half interest in their repair-shop to C. J. Whitten.

The Pioneer Motor Car Co., of Marietta, Ohio, will build a new garage; the location is on Front street.

The Glenwood Garage is the style of a new enterprise in that California town; it is located on Market street.

The India Rubber Tire Co. has opened up in Chicago at 1510 Michigan avenue; Marathon tires are stocked.

H. A. Simmons is about to erect a two-story garage in Dallas, Tex., at 334 West 12th street; it will cost $9,000.

The Pierce County Auto Co., of Puyallup, Wash., has opened a new garage. It is located on Stewart street.

Thomas Shaw, of Wichita, Kan., has opened a garage on South Market street. He will handle Marathon cars.

James Bex, of Syracuse, N. Y., has taken over the garage at 628 Montgomery street, formerly operated by T. F. Willis.

I. A. Vansickle, of Toronto, Ont., will build a two-story concrete garage at 254 Dupont street. It will cost $30,000.

Henry A. Bradley, of Salt Lake City, has secured a site on 7th South street and will erect a garage. It will cost $40,000.

T. D. Kemp has purchased the Auto Supply Co., in Wharton, Tex. Previously it was owned by George Carpenter.

Kates Bros. have opened a garage in Bridgeton, N. J., at Pearl and Warren streets; they have the Regal agency.

William P. Cooper, of Fort Wayne, Ind., has secured permission to build a garage. The site he has selected is on Wayne street.

John A. Jamison, of Wheeling, W. Va., is about to build a garage on Loretta avenue. He will make a specialty of storage.

James E. Brennan, of 25 Library street, Danbury, Conn., has taken over the Green Garage; John W. Green was the proprietor.

Matthew Mackenhausen, Jr., of White Bear, Minn., has opened a new garage and repair-shop; it is located on Banning avenue.

William H. Coolidge has secured plans for a garage to be erected in Gloucester, Mass. The site selected is on Magnolia road.

Carson & Co., of DuBois, Pa., are arranging to erect a new garage and livery building; it will stand on the site of their present structure.

Henry D. Lovering, of Greenwood, Mass., is about to open a garage and repair-shop; he will remodel the Tupper blacksmith shop for the purpose.

Beverly and Reginald Grigsby have completed a new garage, 74 x 50 feet, in Bardstown, Ky. It is located on Arch street between 3d and 4th streets.

T. L. Matthay and Harry Benham, formerly of Chicago, are about to enter the trade in Los Angeles, Cal. They will open a garage on South Main street.

Charles Beblert, of Brooklyn, N. Y., has secured permission to build a garage at 161 Prospect Park West. The application states that the cost will be $3,000.

H. M. Quail, of Dayton, Ohio, has become a dealer; he has the Patterson agency for several counties about Dayton, and is seeking a location for salesrooms.

J. L. Warnock and H. G. Gasner have formed a partnership in San Bernardino, Cal., under the style Warnock & Gasner Co.; they will handle Haynes cars.

Oscar Pollack has entered the list of dealers in Fremont, Neb. He has taken the Hupmobile agency and has secured show space in the Gray Bonnet Garage.

The Star Motor Co., of Chicago, has had plans prepared for a one-story garage, 200 x 200 feet, to be erected at 22nd street and South Park avenue. The estimated cost is $50,000.

The Union Motor Co., of Davenport, Ia., has erected a new garage and salesrooms on Western avenue. The company handles Buick and Oldsmobile cars. Louis Otto is president.

The Auto Tire Sales Co. has opened up in San Francisco, Cal., at 1934 Van Ness avenue; a tire filler is to be exploited. The company is headed by Barney Oldfield, the racing driver.

E. Westerman, formerly of Carlisle, Ill., has purchased the Ford agency in Tulsa, Okla., from W. S. Hall, and will operate it; the salesrooms are located at 215 East Second street.

F. E. Smith has sold his interest in the Letts Auto Co., of Letts, Iowa, to S. B. Furnas; the company deals in cars and accessories and operates a repairing and vulcanizing plant.

N. R. Herrick & Co., of Tampa, Fla., motor boat repairers, are about to build a garage; they have leased a site on Bay street, near Gottsche avenue. Accessories and supplies will be stocked.

The W. S. Williams Auto Sales Co. has been formed in Oshkosh, Wis., by W. S. Williams. He has leased space in the Northwestern block and will operate a garage and handle two lines of cars.

Selley Bros., of Albany, N. Y., plan to erect a three-story concrete garage; the site is at Broadway and Ferry street. It is stated that the establishment will be one of the largest in Albany and vicinity.

Henry A. Bradley is about to erect a garage in Salt Lake City on State street, south of Seventh street; the site cost $10,000, and $40,000 will be expended in the construction of the garage. The site frontage is 60½ feet.

James W. Corrigan, who has conducted a garage in Pontiac, Ill., for several years, has removed his business from the Renoe Building, on North Mill street, to a new garage building; it is located on West Madison street, opposite the Alton station.

E. E. Hewlett, chief backer of the "outlaw" racing association in Los Angeles, where he has been a Fiat dealer, has arranged to represent this line of cars in the Chicago, Seattle, San Francisco and Tacoma, Wash., districts. He has specified Ajax tires as equipment on the cars he handles.

The Chanslor & Lyon Co., accessory and supply dealers in San Francisco, have taken possession of a new four-story building at

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Van Ness and Suttler avenues; the building affords 25,000 square feet of floor space and has a sound-proof room for stenographers and the clerical force, and a "cosy corner" for customers.

The Utica (N. Y.) Motor Car Co., of 337 Bleecker street, has opened a used car department; the new establishment is housed in the Weaver Building, at 52 Jay street, which has been remodeled for this purpose. Weekly used car bulletins to prospects are to be a feature of the business, which will be operated separately from the new car sales work.

The Moon Machine Co. has been incorporated in Muncie, Ind., with $50,000 capital by W. H. Moon, C. R. Moon, O. P. Perkins, Clyde E. Whitehall and Herbert R. Bard. The new corporation takes over the Moon Bros. Co., which has been operating a machine-shop at Hackley street and the Chesapeake & Ohio Railroad and, in addition, will build an automobile engine.

A second automobile clearing house, under the style Auto Sales Co., is about to be established in Indianapolis by Joseph H. Hawkins, who has been engaged in the trade since 1906, for much of the time with the Nordyke & Marmon Co. Hawkins was secretary and treasurer of the first clearing house venture, the Auto Clearing House, which recently removed from West Wabash avenue to North Illinois stret; the new business will utilize the West Wabash avenue location of the first clearing house.

Albert W. Woodruff, as Albert W. Woodruff, Inc., has opened up in Boston as New England distributer of Lozier cars. E. R. Hunnewell, temporary manager of the Lozier business at Commonwealth avenue and Bacon street, is associated with him and the old location is retained. Woodruff has been engaged in the trade for six years and has been connected with the Marathon, Stearns and Peerless companies. Before going to Boston he was manager of the Cleveland (Ohio) Lozier Sales Co. The vacancy in the latter has been filled by the appointment of A. C. Weaver.

William H. McLean, of the Auto Supply Co., and C. L. Brack, of the Southern Auto and Electric Co., both of Little Rock, Ark., have effected a combination of their businesses, under the style the Southern Auto Supply Co. The entire stock of the Auto Supply Co., hitherto located at 113 East Fourth street, has been removed to the Southern Company's location at 405 West Capitol avenue, where the business will be conducted. The combination followed the withdrawal or E. O. Brack from the Southern company; he will continue to conduct the Hudson and Hupmobile agencies and a garage and repair-shop at 405 West Capitol avenue.

"SPITE WALL" DARKENS 24 SYRACUSE GARAGE WINDOWS

Real Estate Squabble Causes Brick Barricade Close to and on Two Sides of Garage—Pretty Question of Lease Involved.

What good are garage windows if you can't see through them? This is a question which is worrying Edward P. Young, a dealer in Syracuse, N. Y., for although a garage which was erected for him has many and spacious windows, 24 of them have been rendered useless by an excellent specimen of "spite wall" which an adjoining property owner has erected within three or four inches of Young's establishment and on two sides of the building.

The garage was built for Young by Wm. Keck, who owns the site, at 212 Jackson street, and stands within about three feet of a wooden building at 214 Jackson street, owned and used by Peter Buettner for the storage of machinery. Just how these little real estate and "spite wall" wrangles start often is not clearly understood, but Buettner claims that employes in Young's establishment annoyed him by throwing dirty waste out of the windows and onto his property, which runs right up to the garage wall.

Buettner claims the Board of Health, upon complaint of Keck, told him he was unsanitary and would have to clean up, and he maintains that so long as the garage windows afforded a convenient exit for used waste he could not keep his premises clean. He also maintains that he contemplated erecting a two-story brick storage building on his lot, anyway, and that as the matter now stands, he merely has been obliged to start construction a little earlier than he anticipated. As it is, the wall extends 70 feet back from Jackson street and about 33 feet across the rear end, and if it comes up to specifications it will, when fully completed, be of the same height as the garage. The darkened windows are 12 on the side and 12 on the back.

The wall, according to Young, renders his garage useless without the installation of artificial light and he claims his lease is automatically nullified. Keck appears to be the man who should worry, for he owns the garage. Young can move.

Advertisers Attach Abbott Dealer.

An action upon notes given by the Abbott-Detroit Motor Co., the former Abbott-Detroit dealer in New York City, resulted in an attachment being granted this week in the Supreme Court for New York County in favor of the Van Cleve Co., a New York advertising agency, for $1,002.87. The notes were given in conection with the company's advertising, and the attachment is also directed against Julius G. Hocke, the treasurer of the company, who endorsed the paper. The Abbott agency and the parent company in Detroit recently severed relations.

Burying the Remains of the Brush.

The Brush Detroit Motor. Co. and the Brush Chicago Motor Co. have filed a petition for dissolution, and the court has given the minority stockholders until September 25 to show cause why the affairs of the two companies should not be wound up. Both were formed as distributing agencies for the United States Motor, but as the Brush car has been discontinued, no reason remains for the Brush agencies' existence, legal or otherwise.

Want Victor Truck Declared Bankrupt.

The Victor Motor Truck Co., of Buffalo, N. Y., has been petitioned into bankruptcy by three creditors whose claims aggregate less than $1,600. They allege that an act of bankruptcy was committed in April last when the company made a general assignment its its assets to one Marc W. Comstock.

Another Building for Diamond Chain.

The Diamond Chain & Mfg. Co., of Indianapolis, has bought what is known as the Holliday & Wyon building at Ohio and West streets in that city, and will utilize it as an annex to its plant on South Senate avenue. The building acquired is a three-story brick and concrete structure, 66 x 145 feet.

Garage, Being Enlarged, Collapses.

While a second story was being erected over the Euclid Square Garage in Cleveland, Ohio, Saturday last, 28th ult., the false work collapsed, burying 30 men and injuring many of them severely. The building, the largest of its kind in the city, was wrecked.

Benson to Build Tractors on Coast.

The W. J. Benson Co., of San Jose, Cal., has purchased all patents and other rights to the Calkins & Johnson tractor, which it proposes to manufacture in San Jose. Benson himself was in Detroit last week purchasing material for the purpose.

Studebaker Retires 4,450 Preferred.

The Studebaker Corporation has notified the Chicago Stock Exchange of the retirement of 4,450 shares of preferred capital stock. This procedure complies with provisions of organization, leaving outstanding $12,650,000.

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A. B. SWETLAND, President and General Manager
F. V. CLARK, Business Manager.

EDITORIAL DEPARTMENT
R. G. BETTS, Managing Editor
S. P. McMINN HOWARD GREENE
R. W. SHERMAN

ADVERTISING DEPARTMENT
BROCK MATHEWSON, Manager
New York Office
1600 Broadway
HOWARD L. SPOHN LOUIS R. SMITH O. H. ADAMS

Western Office
1001 Ford Bldg., Detroit, Mich
W. H. TRIPP, Mgr.

Detroit
1001 Ford Bldg.
MAXTON R. DAVIES

Cleveland
610 Superior Ave. East
C. H. HANDERSON

Chicago
Room 510 Harvester Building
606 South Michigan Avenue
T. E. BULLION

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"POISONING" THE GERMAN MIND.

It may be true that "all is fair in love and war" but in the more enlightened parts of the world, at least, it is a generally accepted theory that in business certain ethics, or principles, or decencies should be observed.

Although Germany is generally considered an enlightened community, the tactics which prevail in the German automobile industry suggest that such theories or such principles have not found lodgment in that part of the empire. Certainly the spirit of fair competition has been so badly twisted that it cannot recognize itself.

As was the case when the American bicycle was uppermost, the American automobile is now the target for almost unbelievable misrepresentation and vilification, which in many instances is vicious, if it is not vile. In the heyday of the bicycle, the Germans not only bodily pirated designs of American bicycles, but boldly reproduced American accessories on an enormous scale, and, though this may not have been wholly unfair, while such tactics were in progress boycotts of papers that printed advertisements of American bicycles were instituted and a wholesale campaign of vilification and misrepresentation was conducted, in print and out of it, in order to poison the German mind against the American article. It is similar tactics that are now being employed to disparage the American motor car.

If Americans had employed like methods to beat back or "kill off" German goods, the German policy might be understood on the fight-fire-with-fire principle, but Americans have done nothing of the sort; they have not even employed the "Rally-'Round-the-Flag-Boys" cry which is intermittently popular in Great Britain. There is, therefore, no valid excuse for the German tactics.

Apparently the mud-slingers have not yet succeeded in poisoning all of the German mind, but whether or no this result is finally attained their contemptible procedure cannot but reflect on the German sense of honor and business decency. It is a sorry commentary on any country when competition can be met only by foul means.

SEATS THAT PROMOTE DISCOMFORT.

In the unceasing effort to improve motor cars, and particularly to add to the comfort of their occupants, not enough attention has been given the "extra seats" with which six- and seven-passenger cars are equipped. The problem is not easy of solution but it is fairly clear that many such seats are little more than mere makeshifts designed to meet competition or to fill somehow a demand which undoubtedly exists. But anyone who ever has occupied such a makeshift seat for any length of time cannot fail to be physically impressed by its discomfort.

Too many of them are lacking in proper cushioning, others have insufficient support for the back, while still others permit no up-or-down adjustment. In a few instances, all of these faults are lacking in particular cars. They merit attention and correction, for the discomfort for which they are responsible is very real and very earnest, so to speak. Apparently some of these "extra seats" were designed with a view that they would be occupied only by children or dwarfs, for in no other way is it possible to account for their size, their paucity of cushioning and their low positioning. Their designers ought to be compelled to occupy them for an hour or two; it would be punishment befitting the "crime."

WILL SIDE LAMPS BE ELIMINATED?

Of all unlooked for developments, none has been so wholly unforeshadowed as the sudden and pronounced trend towards the elimination of side lamps, and even the inset dash lamps, which latter only came into fairly general use within a twelvemonth. There is no mistaking the tendency, however, toward the use of what may be termed double-purpose head lamps; that is, head lamps in which are fixed a separate and smaller bulb which will serve the purposes heretofore rendered by side lamps; when this is not to be the case, automatic devices which will dim the penetrating and dazzling headlight itself apparently will be utilized.

Perhaps it is too much to say that side lamps will be entirely eliminated but it is not to be doubted that the present trend makes for both simplicity and economy, and that it is one of those numerous ingenuities in the wonder-is-it-was-not-thought-of-long-ago category. Making one lamp serve the purpose of two is almost akin to making grow two blades of grass where but one grew before.

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DOWNPOUR MARS START OF INDIANA TO PACIFIC TOUR

Sixteen Cars and Two Trucks Get Away in Rain Storm That Fails to Dampen Enthusiasm—Much Entertainment Scheduled.

With something more than 3,500 miles between them and their destination, and in pouring rain, 18 cars, including two trucks, rolled away from the starting point in Indianapolis under the guiding hands of as many members of the Indiana Automobile Manufacturers' Association on the first leg of their "boosting" journey to the Pacific Coast, thus marking the beginning of what is the most pretentious of all organized automobile tours—a tour that has virtually grown out of last year's Premier coast-to-coast run and that has back of it the experience gained in last year's Four States tour of the Indiana manufacturers. To-night (Thursday) the tourists rest in St. Louis, Mo., after having covered some 340 miles of their trip, and to-morrow they will pass on to Columbia and thence through five States until they reach Los Angeles, where they are due to arrive, according to schedule, on August 2d, just 32 days later, though only 26 of them will be spent actually on the road.

Chairman H. McK. White has the tourists under his wing, so to speak, the complete list of starters being as follows:

D. S. Menasco, two Americans; R. P. Henderson, two Hendersons; W. McK. White, two Marions; John B. Orman, Premier; R. C. Crawford, two Haynes; Bruce Daniels, Pathfinder; J. M. Ward, Premier commercial; Arthur Dixon, McFarlan; Elmer Apperson, two Appersons; H. Hyde, Empire; G. Fred Smith, Pilot; J. Holloway, Brown commercial; C. G. Fisher, Marmon. One Stutz and one Premier were withdrawn at the last minute.

The route that has been laid down for the tourists has been chosen for a threefold reason: Because of its scenic beauty; because of the possibility of "boosting" Indiana products in the towns and cities through which it will pass; and because it has been judged that a goodly portion of the proposed Lincoln transcontinental rock highway from coast to coast will lie within its confines.

The longest day's run—that between Green River, Utah, and Salt Lake City—is 203 miles, and the shortest—between Salt Lake City and Ogden—is 37 miles; the average daily mileage, computed from the following itinerary, is 126 and a fraction. The finally approved itinerary, with the night stops and mileages, is as follows:

July	City.	Miles.
1	Terre Haute, Ind.	71.7
2	Springfield, Ills.	150.0
3	St. Louis, Mo.	117.7
4	Columbia, Mo.	130.0
5	Kansas City, Mo.	158.9
6	In Kansas City.	
7	Fort Riley, Kan.	156.6
8	Ellis Kan.	177.8
9	Burlington, Colo.	169.8
10	Colorado Springs, Colo.	165.9
11	Denver, Colo.	69.2
12	In Denver.	
13	Hot Sulphur Springs, Colo.	89.8
14	Glenwood Springs, Colo.	104.2
15	Grand Junction, Colo.	104.5
16	Green River, Utah.	154.0
17	Salt Lake City, Utah	203.2
18	In Salt Lake City.	
19	Ogden Utah	37.2
20	Kearney's Ranch, Utah	146.8
21	Ely, Nev.	124.3
22	Austin, Nev.	147.3
23	Reno, Nev.	183.5
24	Lake Tahoe, Cal.	72.0
25	Sacramento, Cal.	143.0
26	Oakland, Cal.	130.7
27	San Francisco, Cal.	6.0
28	In San Francisco.	
29	In San Francisco.	
30	Del Monte, Cal.	150.0
31	San Luis Obispo, Cal.	149.9
Aug.		
1	Santa Barbara, Cal.	119.6
2	Los Angeles, Cal.	105.8
	Total	3,539.4

It is a pretty fair guess that long before those who ride in the cars reach their destination, they will have had enough and plenty of touring—and of receptions and banquets and speeches and "boosting" and other things that have been planned for the entertainment of the tourists. In practically every city through which the tour will pass elaborate preparations have been made to entertain the tourists on a lavish scale, and in not a few cases reception committees will be headed by high municipal and State authorities. Governors Major of Missouri, Ammons of Colorado, Spry of Utah, and Odie of Nevada, for instance, will escort the party between the boundaries of their respective States, and Gov Johnston of California will journey eastward as far as Lake Tahoe, on the boundary of the State, to greet the tourists there.

Prior to the official start of the tour, which was made at two o'clock in the afternoon, all the cars, flag-bedecked and carrying their khaki-uniformed crews and guests, were lined up before the photographers, after which luncheon was served at the Hoosier Motor Club headquarters. Then, after a triumphal parade through the principal business streets of the city, preceded by formal presentation by Lieutenant Governor O'Neill of a large American flag and letters of introduction, the official starting gun was fired by Battery A of the Indiana militia ensconsed on the State House Plaza.

Arrived at Los Angeles, the tourists will remain four days to recuperate and to see the sights, the return date having been set for August 6th, when a special train will leave for the East.



*Indicates Sanction by A. A. A.

July 4, Brooklyn, N. Y.—Long Island Automobile Club's secret time, secret mileage run.

July 4, Washington, D. C.—National Capital Motorcycle Club's track racemeet.

July 4, Taylor, Tex.—Track races under the auspices of the Taylor Automobile Club.

July 4, Columbus, Ohio—Columbus Automobile Club's 200-mile track race.

July 4, Los Angeles, Cal.—Start of Western Automobile Association's road race to San Francisco.

July 4-5, Sioux City, Ia.—Sioux City Automobile Club's track races on Speedway.*

July 4-6, Tacoma, Wash.—Road races under the auspices of the Montamara Festo Automobile committee.

July 11, Minneapolis, Minn.—Start of the American Automobile Association's national reliability tour.

July 18-19, Peoria, Ill.—Automobile Club of Peoria's track racemeet.

July 20, Seattle, Wash.—Track racemeet under auspices of E. A. Moross.

July 27, Grand Rapids, Mich.—Grand Rapids Automobile Club's reliability tour.

July 28-29-30, Galveston, Tex.—Galveston Auto Club's beach racemeet.

Aug. 9, Santa Monica, Cal.—Santa Monica Road Race Committee's road races.

August 18-22, Milwaukee, Wis.—Wisconsin State Automobile Association's fourth annual reliability tour.

August 12, Kansas City, Mo.—Kansas State Automobile Association's reliability tour.

August 29-30, Chicago, Ill.—Elgin Road Race Association's road races.

August 30-September 6, Chicago, Ill.—Reliability tour of the Chicago Motor Club.

Sept. 9, Corona, Cal.—Speedway track races.

Sept. 12, Youngstown, Ohio—Canfield Fair Association's track racemeet.

October 4-11, Chicago, Ill.—Chicago Motor Club's Around Lake Michigan reliability tour.

November 24, Savannah, Ga.—Vanderbilt Cup road race under auspices of the Savannah Automobile Club.*

November 27, Savannah, Ga.—Grand Prize road race under the auspices of the Savannah Automobile Club.*

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BRITISH ENGINEERS DECRY CYCLECARS AND STARTERS

Two of Them, Well Versed, Rate Cyclecar Boom as a Bubble—Explain Lack of Demand for Starters.

To be British must be painful—to the pocketbook, at least—if it implies that studied indifference to natural progression which masks under the definition of conservatism and which so often serves as the British excuse for overlooking the advantages of something that some one else has developed just because it is more or less new, though not necessarily untried. And it is this British conservatism, with all its apparent drawbacks, that is held up as the real reason and the prime one for the marked absence of engine starting devices in a country to which American engineers at one time turned quite frankly for inspiration, if not for "styles."

Patriotism as a Bar to Progress.

As a plain indication of the "conservatism" with which the British automobile engineer in the abstract has adopted the engine starter which in America has been adopted by all save one manufacturer of note, it is only necessary to refer to the statistics of the last Olympia show, a show which tacitly represented the latest ideas of the British trade and reflected tendencies in the public demand. Among the 200-odd makes of cars that were shown an almost conspicuous 13 brands were fitted with engine-starting devices, and in a number of cases they were special equipment fitted at the demand of the purchaser and at his expense. Of these 13 brands, five had combined electric lighting and engine starting systems, of which three bore American trademarks; four had pneumatic starters, three had American spring starters, and one was fitted with an ignition starter. This to put it mildly, quite a contrast to conditions in America, where scarcely a single car is sold to-day minus some sort of an engine-starting device.

The typical Britisher is a patriotic sort of chap who not infrequently pushes his patriotism to the point where it blinds him to the strides that are being made by others; he wants and must have British-made goods; there is an insistent demand for home products that is well reflected in British advertising literature, which is liberally dotted with the all-satisfying phrase, "British made." And a good deal of the blame for the lack of demand for engine starters can be traced right back to this fact, for British engineers have as yet made no serious attempt to produce their own engine starters. They can get American starters quite easily—there are a number of American engine-starting and lighting systems available on the British market—but they won't have 'em. "No demand" appears to be the all-sufficing excuse for the lack of attempt to create a demand. The whole subject of engine starters is dismissed with an airy wave of the hand as an American foible—a something too indefinite in its possibilities for serious consideration by serious persons; a bubble, perhaps.

Advantages of Starters Overlooked.

This despite the fact that it has been proven time and again that the advantage of an engine starter as a convenience, and as a means to the postponemnt of the inevitable decease of the engine because of old age, is second only to its importance as a live-saving instrument; and as a medium through which to eliminate positively the danger of personal injury caused by back kicks or by successful attempts to start the car with the gears enmeshed. These things have been overlooked, quite, along with the merchandising possibilities opened up by an electrically lighted and started car.

"Why are there so few engine starters used in England?" repeated J. A. Prestwich, when questioned by a Motor World man during his visit to the United States as one of the party of British engineers who came across the sea as the guests of the Society of Automobile Engineers. "I think it is simply because there does not appear to be any demand for them," he continued. "The motor car buying public does not want starters; at least, not yet., for the prevailing impression with regard to them seems to be that they are not more than half-baked; that they are liable to give more trouble than they are worth. To me this seems unusual because of the success of the Cadillac car with its Delco system; the owners of these cars seem quite satisfied with them, and it is very seldom that one hears of trouble or of a dissatisfied owner of a Cadillac changing over to a car of another make.

Explaining Away Lack of Demand.

"The reason for the lack of demand can be explained in several ways: In the first place, the average British engine in the medium-priced-car class is a smaller engine than the engine used in American cars selling for about the same amount; this is accounted for by the high tax placed upon rated horsepower by the government, and, though manufacturers have taken advantage of the rating formula by increasing strokes—very considerably, in some in-

(Continued on page 30.)

MOTOR CLUB DOWNS ATHLETES IN FIRST INTER-CLUB MATCH

Hot Weather and Needed Water Spell Defeat for Milwaukee Athletic Club—One Accident Adds Excitement.

Eleven members of the Milwaukee Automobile Club took on a like number of members of the Milwaukee Athletic Club on Saturday, 28th inst., in the first annual interclub reliability tour between these two organizations, and long before the 22 cars that carried the tourists and their guests got back to the starting point the blue bars of the athletic club were trailing in the dust; the athletic club was roundly trounced by the automobile club, the final score standing 81 to 174. The tour or team contest was run under modified Grade III. reliability contest rules of the American Automobile Association, and the route led from Milwaukee to Lake Geneva and around it and back, the total distance being in the neighborhood of 75 miles.

Of the 22 contestants who started only six were penalized, all the others coming in with clean slates despite the torrid weather and the "bumps" on some of the roads traversed. There was only one thrill in the day's run, and this was caused by J. Fitzgibbons's Kissel, which blew a shoe on a straight, level road and went through a fence, sustaining a bent mudguard; no one was hurt, and as no work was done on the car no penalties were charged. Practically all of the penalties inflicted were for taking on water out of control. The complete score is as follows:

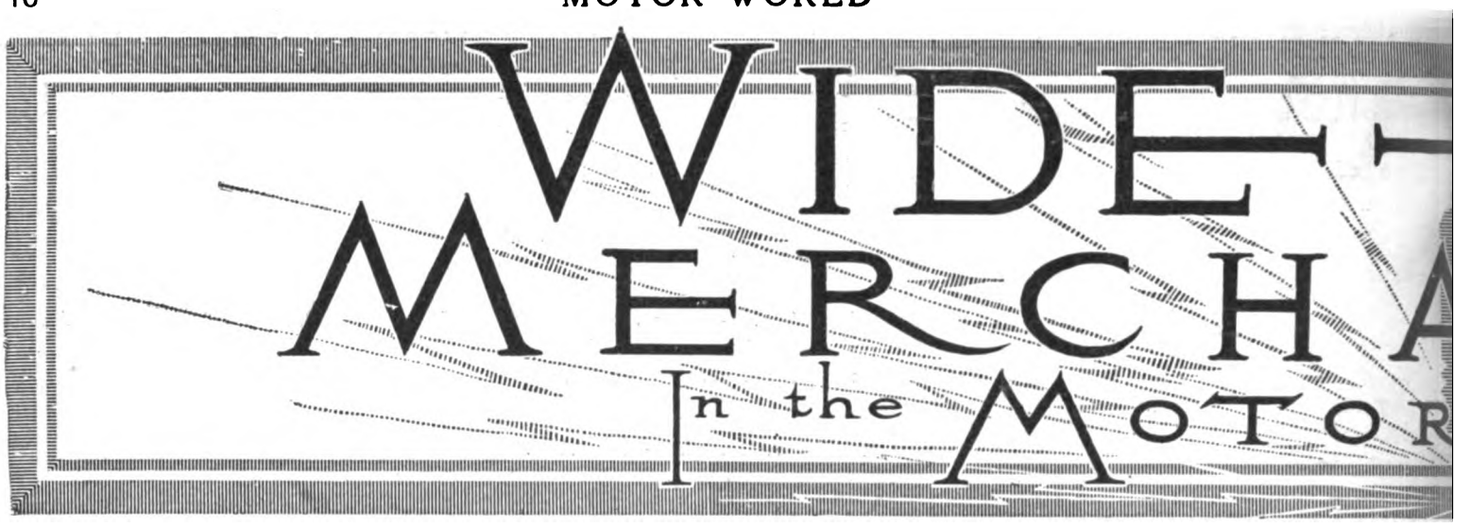
MILWAUKEE AUTOMOBILE CLUB.

Driver and Car.	Penalty.
Dr. C. M. Marcan, Mitchell	55
F. Prinz Stevens-Duryea	25
O. Stegeman, Stoddard-Dayton	1
O. S. Fischedick, Chalmers	0
H. G. Stenzel, White	0
L. Meyer, Mitchell	0
F. Gettelman, Maxwell	0
A. McGuire, Chalmers	0
H. Haefner, Locomobile	0
C. A. Carpenter, Hupmobile	0
Dr. Robey, Overland	0
Total	81

MILWAUKEE ATHLETIC CLUB.

Driver and Car.	Penalty.
Con Raulf, Jr., Stutz	89
J. MacDonald, Maxwell	53
R. Johnstone, Kissel	32
M. C. Moore, White	0
J. Fitzgibbons, Kissel	0
A. Gesser, Simplex	0
S. E. Eller, Cadillac	0
A. L. Keifer, Winton	0
H. H. Cutler, Pierce-Arrow	0
R. V. Rice, Abbott-Detroit	0
George Leiser, Stutz	0
Total	174

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KEEPING OWNERS' GOOD-WILL

Maintaining Close Touch with Customers Likely to Retain Them—Dealers' Methods, One of Which Won, One of Which Lost, Sale.

Keep in close touch with your customers—you never can tell when they may be ready to buy again. Whether you make the sale or not may depend much on how closely you have kept in touch with the customer.

Too many dealers consider the sale the real point, when as a matter of fact it is being more continually emphasized by both the live automobile manufacturer and the progressive dealer that in reality the sale of an automobile only begins with its delivery and the payment of the cash.

Silence Does not Signify Satisfaction.

The fact that you do not hear from a man with a complaint is no sign that he is thoroughly satisfied with everything, and the fear of encountering unpleasantness is the very best reason in the world why you should make it your business to call and see customers and make sure they are satisfied. Otherwise you may be in the position of the salesman who heard that one of his customers was in the market for a new car. Calling on him immediately, he was grieved and surprised to learn that he had no chance to get the order. He then not only found that the customer was dissatisfied and why he was dissatisfied, but was told that the word of the customer had been pledged to another dealer who had been constantly on the job. "In fact," said the customer, "I have already signed the contract and my new car will be delivered during the coming week."

Diametrically opposite comes the story of a dealer who was trying to sell a Peoria man a high-priced car that he felt sure was better mechanically than the one the car owner was driving. "Your car may be better," said the owner, "but I am not prepared to believe that it is possible to give me any better service than I have been getting from the ——— company. Regularly as clockwork once every three months they write me that their man will be here on a certain day to look over my car. He comes and goes over the car from start to finish. True, there is never very much to do—but he does whatever is necessary, produces a paper which I sign and goes on his way to see other users in the vicinity. This has been going on for over two years and my car, and the service given me, satisfy me thoroughly. I have no desire to change."

REGAL WAY OF REGULATING THE HANDLING OF USED CARS

The method of handling the Used Car problem employed by the Regal Motor Sales Co., Detroit, is to limit the number of used cars that are taken in trade "We never permit ourselves to have on hand more than three used cars at any one time, and in slack months we keep this down to two cars," said Manager Geo. W. Franklin in discussing the subject "Our idea is to take in not only what cars we know we can move readily, and those must be at prices at which we can make a profit.

Unreasonable Allowances Ruinous.

"Too many dealers have their entire season's profits tied up in used cars that are depreciating in value all the time. Used cars must move quickly if you are to get your money out of them. I know one dealer who quoted a prospect a discount of 18 per cent. after the prospect had told him he could get 15 off on another make of car. On top of that he allowed him $700 for a trade-in that he is now offering for $500. How on earth he can break even or even stay in business I don't know.

"I would rather lose a sale than give away all my profits—and I certainly will not jolly myself into giving big allowances for used cars. There is a growing disposition on the part of dealers to be saner in their allowances, and when all of them take a little time off with lead pencil and paper and figure out just where they got off on each of the last half dozen trade-ins it will be for the decided advantage of all. There are so many ways that a firm can lose money in business where it is hard to find the cause, that it is mighty important to make as few mistakes as possible—and the too liberal allowances for used cars is one of the mistakes that nobody should make."

IMPORTANCE OF TABULATING ALL REPORTS ON PROSPECTS

The proper recording and tabulating of prospects and the salesmen's reports thereon is one of the most important and vital details in the conduct of an automobile business. Don't let your men lose a day or a week in turning in reports. Make them report daily. That will give you a chance to act and use your judgement while the situation is hot. There is a psychological moment. The dealer who watches the reports of his salesmen carefully and supplements them by personal conversations will discover many of these psychological moments and get business that would otherwise slip by.

ONE MORE ESTIMATE OF THE "CHIEF CAUSE" OF FAILURE.

"The chief cause of failure—in business and out—is that men don't go back often enough; their courage dwindles and they look for an easier corner," says a writer in a recent issue of the Saturday Evening Post. There is a lot more in this statement than appears on first blush. It applies to the ordinary conduct of a business with its multitudinous worries, disappointments and unexpected happenings. It applies with equal force to the activities of the sales force.

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MAKING COURTESY AN ASSET

Impoliteness May be Productive of Disastrous Results — Incident Which Forcibly Impressed the Fact Upon a Truck Dealer.

The reputation of being courteous and pleasing is not difficult to acquire, and it is a business asset that grows with the spreading of one's reputation.

This fact is sometimes brought home to a man in the way of antithesis. For example: A large dealer in trucks attended a circus and arriving late, was unable to secure reserved seats with the result that he and his family were forced to seat themselves on a mound of straw placed in front of the grandstand. As luck would have it, in front of him was a man who persisted in standing up on his knees and obscuring the view. After a short time patience ceased to be a virtue and the truck dealer called out "Sit down, please." No attention being paid to his request, he waited a little longer and then yelled, "Sit down, you boob!" This time the man looked at him and then turned his back on him. A few more commentary names were hurled at him, and finally he shifted his position. The truck dealer was contented and forgot the incident.

Meets Man Whom he Had Called "Boob."

Several weeks later one of his men called him to go with him and assist in closing a large deal. Judge of his surprise when he was confronted with the very man whose seat at the circus had proved so very objectionable to him. The man did not appear to remember him, but he was unable to close the sale, and he has carried with him ever since the conviction that the circus incident had a lot to do with his failure.

Whether or not this was the case only the truck buyer knows to this day, but one thing is certain, then and there the dealer wrote indelibly on the tablets of his memory the little line, "Be courteous and polite anywhere and everywhere, for it pays."

ONESELF AS AN INVESTMENT; HOW TO MAKE IT PAY BETTER

When you feel tired, lazy and indifferent, that's the time to give yourself a mental overhauling. Keep books on yourself. Know yourself all ways. What you will find out by "keeping books" of this sort will surprise you. Incidentally, it will enable you to add immeasurably to your business efficiency.

If a man had an investment that he himself managed and it brought him in an income of $4,000 a year, he would watch it carefully. He would study day and night to see how it could be increased. He would take pencil and paper and see where he could trim this or that item of expense. Then he would lay out and plan additional machinery, building, equipment and labor, as the case may be, that would be necessary to multiply his production. He would not do it in his head. He would put it down on paper.

The man whose services net him $4,000 a year is drawing virtually a 10 per cent. income on a $40,000 capitalization. He himself for income purposes represents a cash value of $40,000. That is a lot of money. It represents an investment that should be watched and planned for with the utmost care. It should be fostered and developed to assure a substantial yearly increase in value. What are you doing in that direction?

GETTING THE MOST OUT OF DEALERS' PROSPECT LISTS.

A Detroit dealer who regards his prospect list as one of the most important details of his business has corrections made every day. They are not held over a month or a week; he insists that all changes and corrections be made within 24 hours. The result is a list worth real money. There is no chance to accumulate a long "dead" list that no one knows very much about.

Too many dealers have lists that sadly lack up-to-date information. They do not even know whether or not the prospect has made a purchase. The dealer referred to also enforces a rule that when a salesman does not report a call on a prospect within thirty days the prospect belongs to the "house." As the men are all working on commission, it will be readily seen that this keeps them hot after the business with a golden reason for "clinching things" wthin a specified time.

HELPING EMPLOYE AS WAY OF HELPING ONESELF MORE.

As long as men are human there will always be some weak spots. How do you help your men? Do you help them or do you just leave them alone and hope that they will work out their own salvation? The big prizes are for those who can handle men—who can help them to do better—and do it from the practical standpoint of having done it. You cannot help men unless you know more than they do. How can you know more? By increasing your knowledge, by expanding your brain power. By dealing in facts instead of guesses.

When Copying Forceful Man is Helpful.

Do you lack force or aggressiveness? Picture in your mind the most forceful and aggressive man you know. Imagine what he would do under circumstances that you are about to encounter. Then act as if you were that man. You will find that this plan has a practical value that can only be appreciated by trying it. Persistency, energy, enterprise can be developed in the same way. Don't sneer at the suggestion. Try it.

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UNCLE SAM REVISES MOTOR CAR STATISTICS FOR 1909

Belated Corrections Make Important Changes in Census—265 Instead of 316 Automobile Factories—More Cars and Capital.

Final revision of the preliminary census figures for the year 1909, which first were made public two years ago, has resulted in the amendment of some of the statistics applying to the automobile industry, which statistics are the subject of a bulletin which is being made ready for publication by the Census Bureau of the Department of Commerce.

As outlined, the final figures indicate that in the grand totaling-up the statisticians found nearly 1,000 more automobiles than originally reported, the final count showing a total production during 1909 of 127,289 cars instead of 126,593, as originally reported. It has also been found that while the total value of automobiles, including bodies and parts, was $249,202,075, $84,986,000 is the value of such products reported by establishments chiefly engaged in the manufacture of bodies and parts, instead of $55,378,967 as was indicated by the preliminary report.

The number of factories producing complete automobiles in 1909 proves to have been 265 instead of 316, and the average number of wage earners connected with the industry in 1909 also totals 75,721, instead of 51,294, their wages being $48,694,000 instead of $33,180,474.

In the revision, the total capital invested in the 265 factories producing complete automobiles was found to be $173,837,000, instead of $134,592,965 as was indicated by the preliminary figures.

According to an outline in the forthcoming bulletin which just has been issued by the Department of Commerce, of the 743 establishments engaged in the manufacture of automobiles, including bodies and parts, in 1909, only 265 manufactured complete automobiles as their product of chief value, but these establishments employed more than two-thirds of the average number of wage earners engaged in the entire industry.

The total value of products in the year 1909 for the two branches of the industry combined was $249,202,075, of which $193,823,108 was the value of products reported by the establishments engaged principally in the manufacture of automobiles, and $55,378,967 that reported by establishments manufacturing principally automobile bodies and parts.

The total which is obtained by adding the figures for these two branches of the industry involves considerable duplication, however; probably a better measure of the actual value of the products of the automobile industry in 1909 would be the total value of the complete machines manufactured, which was $164,269,324.

Of the 126,593 automobiles turned out by establishments of the industry in 1909, all but 23 were made in establishments reporting complete automobiles as the product of chief value. In addition to the automobiles manufactured by establishments assigned to this industry, 694 automobiles were reported by establishments engaged primarily in the manufacture of other products.

As already is well known, Michigan was the leading State in the industry, holding first rank at the censuses of 1909 and 1904 in respect to the average number of wage earners employed, the value of products, and the value added by manufacture. In 1909 the factories in Michigan reported 33.6 per cent. of the average number of wage earners employed in the industry, 38.8 per cent. of the value of products, and 36.4 per cent. of the value which was added by manufacture.

The total number of persons engaged in the industry in 1909 was 85,359, of whom 75,721, or 88.7 per cent., were wage earners, 2,564, or 3 per cent., proprietors and officials, and 7,074, or 8.3 per cent., clerks—a class which also includes other subordinate salaried employes. Of the persons engaged in the industry in 1909, 82,918, or 97.1 per cent., were males and 2,411, or 2.9 per cent., were females. The average number of children under 16 years of age employed as wage earners in the industry in 1909 was 162, of whom 159 were males and 3 were females.

In both 1909 and 1904 more than five-eighths of the total number of establishments were under corporate ownership, the percentage being slightly higher in 1909 than in 1904. This group of establishments, however, contributed a much larger proportion of the total value of products in 1909 than in 1904, 94.6 per cent., as compared with 88.1 per cent. The proportion of establishments under individual ownership increased slightly during the five-year period, but the value of products reported for this group formed a smaller percentage of the total in 1909 than was the case in the year 1904.

Of the 743 establishments reported as engaged in the industry in 1909, 56, or 7.5 per cent., had products valued at more than $1,000,000 each. The corresponding figures for 1904 were 10 out of 178 establishments, or 5.6 per cent. Although these establishments were relatively unimportant numerically, they reported a large proportion of the total value of products, the percentage for 1909 (68.4) being much larger than that for 1904 (46.6).

Of the automobiles turned out by establishments engaged in the industry in 1909, 95.1 per cent. were gasolene vehicles, the proportion being considerably larger than in 1904 (86.2 per cent.). The number of gasolene automobiles made in 1909 was more than six times as great as the number made in 1904. Steam and electric vehicles gained in number at a much less rapid rate, showing increases of 51.4 and 168.5 per cent., respectively, and each of these total number in 1909 than at the preceding classes formed a smaller proportion of the census. In 1904 more steam than electric automobiles were reported, but in 1909 the reverse was true.

Michigan was the leading State at each census in respect to both the total number and total value of motor vehicles manufactured. The automobiles made in Michigan, where the industry is largely centralized, represented 51.2 per cent. of the total number and 42.8 per cent. of the total value in 1909, and 42.1 per cent. and 27.6 per cent., respectively, in 1904.

Indiana and Ohio ranked second and third, respectively, in 1909 in the total number of automobiles produced, but in the value of the output Ohio was second and Indiana third. While less than half as many automobiles were made in New York as in Indiana, the value of all machines produced in the former State was practically equal to that reported for the latter division of the country.

More than half (64,262, or 53.4 per cent.) of the total number of gasolene automobiles and nearly half ($69,139,223, or 45 per cent.) of their total value was reported by Michigan in 1909. Ohio was the leading State in the production of electric and steam automobiles, reporting 37.6 per cent. and 81 per cent., respectively, of the total value of these machines in 1909.

Of the various classes of automobiles, the most important in point of numbers and of value is that of touring cars, the total number of such cars manufactured in 1909 being 76,114, with a value of $113,403,188, as compared with 7,220, valued at $11,781,521, in 1904. Such cars represented 60.1 per cent. of the total number and 69 per cent. of the total value of the automobiles which were made in 1909.

The following table gives the figures in detail:

	1909	1904	Per cent. of increase
Number of establishments	265	121	119.0
Persons engaged in the industry	58,142	11,246	417.0
Wage earners (average number)	51,294	10,239	401.0
Capital	$134,592,965	$20,555,247	554.8
Wages	$33,180,474	$6,178,950	437.0
Value of products	$193,823,108	$26,645,064	627.4

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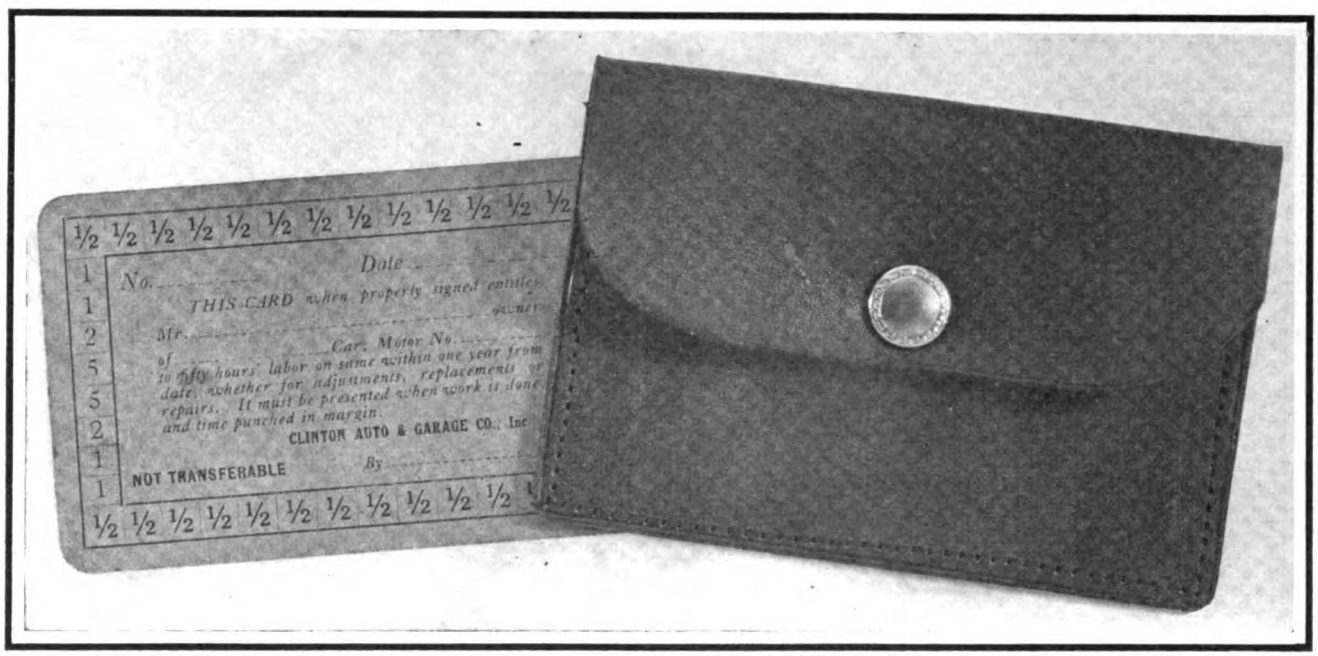
"GETTING THE JUMP" ON MAN WITH COMPLAINT

Dealers Who Anticipate Trouble and Adverse Criticism and Use Effective Forestalling Methods—Service "Commutation Ticket" as an Assurance of Satisfaction—Systems That Bring Increased Sales.

Two little boys in a "York State" district school, which still stands in the midst of its bare-worn playground and knife-carved trees, were very happy boys one winter day years ago when a stereopticon show visited the district and the proprietor offered prizes to the boys who sold the most tickets; one of the boys had been a "city kid," while the others had been born and brought up in the country, and what that "city kid" did to those country boys was a shame.

They all set out to sell tickets, but nearly everywhere the country boys went, on any road, at any house, they found that that "darned city kid" was about one jump ahead. Who won the prize? Don't ask such foolish questions. The "city kid" had put into practice a principle which is just as good in business for grown-ups, as may be attested by the dealer who is continually nettled to find that some dealer or dealers are just "one jump ahead."

Applying the "one jump ahead" principle may be done, however, in a slightly different way, and the way is demonstrated by George F. Little and Charles H. Simerson, who sell Studebaker cars in West Hoboken, N. J., at 1435 Hudson Boulevard, as the Clinton Auto & Garage Co. While they believe in trying to keep ahead of their competitors they also believe in increasing this lead by keeping "one jump ahead" of the prospect. Neither are they secretive regarding their methods, so far as making them known to their competitors is concerned, for while they don't say so in so many words, they appear able to maintain that "one jump" lead no matter how much their methods may be copied.



SERVICE "COMMUTATION TICKET" WHICH ENTITLES CAR OWNER TO FIFTY HOURS OF FREE AND UNRESTRICTED LABOR.

Keep "One Jump Ahead" of Prospect.

Keeping one jump ahead of the prospect is one thing which enables them to keep the same distance ahead of their competitors, and it is nothing more or less than anticipating the next move of the prospect and "beating him to it"; before he has had a chance to advance an argument or make a complaint, provided he has become an owner, these dealers endeavor to forestall him, and, paradoxically, correct things before they go wrong.

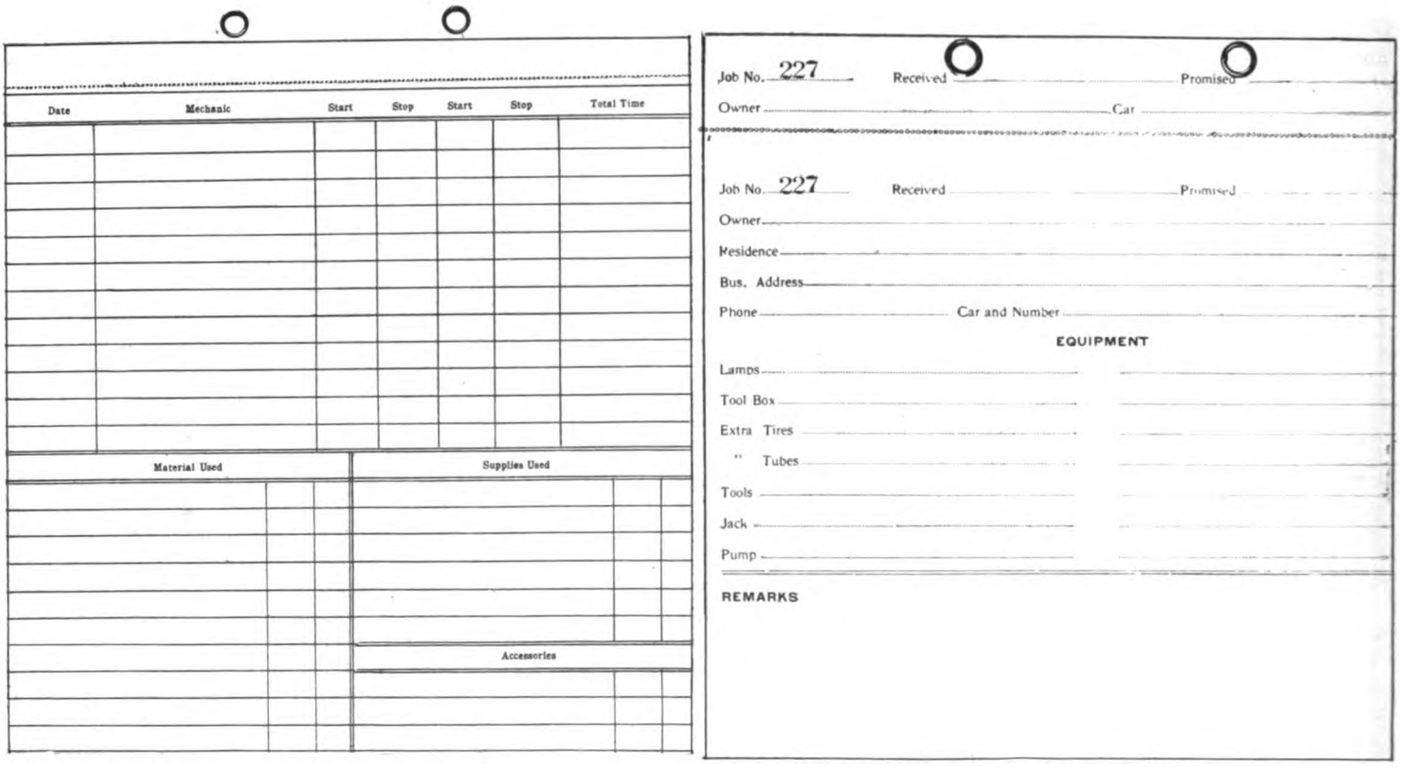
Their methods are exemplified in the concrete by their handling of the service problem; they aim to give the new owner a requisite amount of service, but not an extreme amount, and they aim to make service an amiable meeting ground between dealer and owner. The concrete illustration is contained in a "service meal ticket," which is shown in connection with this story, and it is giving the best of satisfaction. It entitles the new owner to fifty hours of free labor on his car, and in the margin of the card are hours and half hours to be punched out as the work is done. It is sent to each car buyer encased in a neat leather case, which also provides room for the owner's driving license, and must be presented whenever work is desired.

Before this card was placed in service there was often dissatisfaction of a minor nature on the part of owner and dealer regarding the matter of service. An owner would buy a car and while he had been told he would be taken care of he often hesitated to bother the dealers for trivial things, and there was encountered now and then an owner who thought he was entitled to an unlimited amount of service and did

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not hesitate to ask for it. Some owners wanted more than fifty hours of labor and others were satisfied with less, so the dealers estimated that fifty hours ought to be a fair average, and acted accordingly.

Of course, any replacement of parts which does not come within the guarantee, any accessories, any supplies or any material is charged for, but this card says to the owner: "We will give you fifty hours of labor; it doesn't make any difference whether it is tightening up a nut or whether you run your car over the edge of Palisades and smash it, we will give you fifty hours of labor without a cent of cost to you. It's your; use it when and as you please."



REVERSE AND OBVERSE OF NEW JERSEY DEALERS' REPAIR CARD WHICH FURNISHES IRREFUTABLE RECORD

Donated Work Has No Restrictions.

This method varies from the service given in many establishments, for the term service is often taken to include only such repairs as come from ordinary running, and repairs due to accidents are charged for; this may be right in principle, but these New Jersey dealers avoid all chance of disagreement by making a donation of fifty hours of work and having the whole question forever settled. It also makes an owner feel free to have any adjustments and minor repairs made, and for ordinary usage the card will cover very close to the year for which it is given. The card puts the dealers one jump ahead of the owner; it anticipates any service disagreements and keeps the owner satisfied.

In the repair-shop the same principle is in effect; when an owner brings in his car to have work done upon it a job card is brought out and he is requested to write under the heading "Remarks" the work he wants done. The stub of the card goes to the shop with the car and the larger section of the card is kept in the office; one side of the card contains a record of the job number, when the car was received, when it was promised, the owner and address, and the equipment in the car. The other side contains a time record, showing to the minute how much time was put in on the car, and provides a record of material used, supplies used or accessories installed. This record card, from the dealers' standpoint, is another trouble preventer; in case an owner is inclined to dispute as to the work the dealer has in black and white the owner's order and the time and material required. Should an owner be a lover of litigation the card furnishes an almost irrefutable record.

How "Gas" and Supplies Are Vended.

Gasolene, oil and supplies are furnished the owner with another indisputable record; a billing sheet provides a space for the date, the amount bought and other necessary items and every time anything is supplied to an owner he or his chauffeur signs in the "attest" column to the effect that the goods in question were delivered. At the end of the month gasolene and oil are totaled at the prevailing price and the bill is sent to the owner. A carbon record is kept by the dealers. The original of the bill is blue and the carbon copy yellow, thus preventing the two from getting mixed in any way. The names of the owners are kept on an index sheet in the front of the filing book, and it is a matter of seconds only to turn to the account of any customer.

Simerson is the mechanical genius of the firm and cares for the garage and shop work; the business is housed in a one-story structure, 185x50 feet, with a basement at the rear which has an exit to a side street of lower elevation than the street in front. A 50x50 addition is contemplated. The garage is open day and night and some one is always in attendance to care for the owners. Most of the washing is done at night, and some member of the firm and an employe or two are always on hand Sundays.

Blackboard to Make Directions Sure.

To render a convenience to owners a blackboard, about 2½x3 feet, is located near the garage door, upon which an owner, should he enter at night, may write directions to the firm as to what he wants done with his car. The order thus recorded cannot be overlooked, and any orders received for chauffeurs are posted on this board, where the chauffeur sees them as soon as he enters the building.

In sales work, too, the one-jump-ahead policy prevails, and that it must have something to do with results is indicated by the volume of sales attained; in fact, some

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ember of the firm is generally harrying the New York Studebaker branch for more ars. One day a man who lives within these dealers' territory, which consists of Hudson, Bergen and Passaic counties, was n New York, and arrangements were made to sell him a used car which was in the Little-Simerson salesrooms; this arrangement was easily made, because the dealers and the branch enjoy the most amicable of relations.

Clever Exit from Puzzling Situation.

On his way home the new owner stopped at the Clinton Garage and left his check for the car; it was Saturday and the check could not be deposited until Monday, and that evening Little was surprised when the new owner called him up and said there are some things about the car he didn't like.

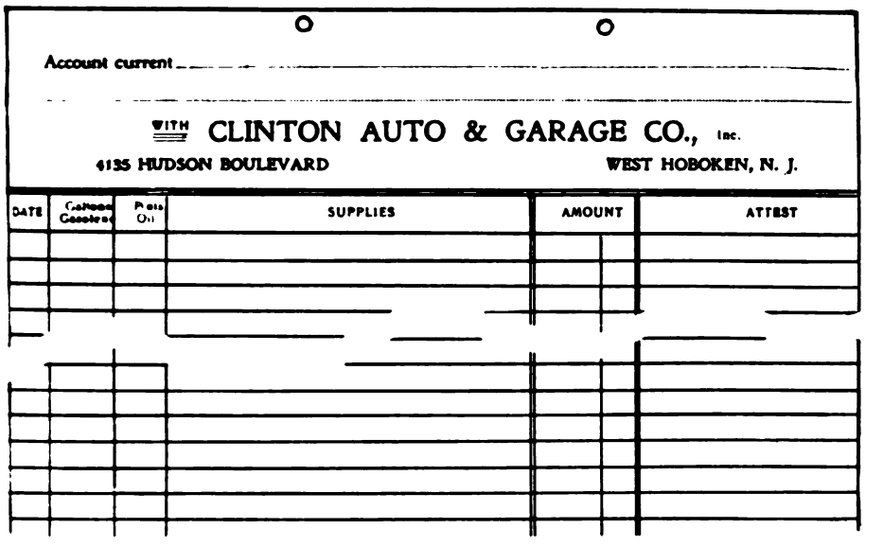
Here was a quandary; the owner had ample time between then and Monday to stop payment on the check, and Little knew it so he said: "Bring it over and let's see what the trouble is; if it isn't right and we can't make it right we'll give back your check." This move "got the jump" on the buyer, and when he called later he was in good humor; any feeling which might have led to the stoppage of the check had been forestalled. The owner said the cooling system leaked. Little fixed it in a minute with the turn of a wrench and similarly adjusted several other minor difficulties.

Gives Real Reason for Disliking Car.

Then the owner said: "I'll tell you what's the trouble; the boys don't like this car; they want a 'six.'" "I don't blame them," replied Little. "You can get a lot more satisfaction with a 'six'; you'll like one better. I've got a 'six' I'd like to show you. But," he added, "you are under no obligations to buy it and if you want your check before you see the 'six' I'll give it to you now. But I really would like you to look at the 'six' before you go back."

The owner looked at the "six" and he never took that check back; instead he wrote out another one to go with the first one. The sale was saved largely because Little offered to return a check that he knew wouldn't be any good anyway if the owner happened to take a notion to stop payment. This made the owner realize the firm's fairness in dealing, kept him good-humored and, instead of not being sold at all, he was sold twice.

The dealers keep at least two regular salesmen busy and have quite a number of sub-dealers in their territory; by apportioning their field in this manner they effect a larger volume of sales and are enabled to take advantage of the larger commissions under the Studebaker sliding scale, which slides up and not down, like McReynolds's tobacco box. Little was telling of some of the troubles he has had with salesmen and cited the instance of a man who didn't know when to shut up and close a sale.


Account current

WITH CLINTON AUTO & GARAGE CO., Inc.

4135 HUDSON BOULEVARD WEST HOBOKEN, N. J.

DATE	Gallons Gasoline	Pints Oil	SUPPLIES	AMOUNT	ATTEST

BLANK THAT REQUIRES OWNER OR CHAUFFEUR TO ATTEST SUPPLY PURCHASES

Salesman Who Demonstrated Too Much.

"He didn't know when to stop," said Little. "He took a prospect out one day and the prospect asked to be taken up a certain hill in town here. The salesman took him to the top in fine shape and the prospect said, 'I guess that's the car for me, all right.' He was sold right then and there, but the salesman spoiled the sale. He said, 'Huh! That hill isn't anything. Wait until I show you what the car will do on a real hill.' The salesman tried to climb another hill, which the car was able to climb, but the carburetter just happened to go wrong and the prospect changed his mind. If the salesman had let well enough alone and sold the car when it was sold he would have been all right."

"Who is he—one of your salesmen?" asked the Motor World man.

"Not now," was the sufficient reply.

One of the firm's assets in the way of salesmanship is the varied experience of Little. He might have been the head of a good carriage and automobile manufacturing business in Canada now if his father hadn't let the insurance lapse just before a fire that cleaned out the whole plant. That was years ago, and since then Little has been a British cavalryman, an electrical salesman in China, an Oriental pottery merchant, a manufacturing jeweler and a few other things too numerous to mention. But as long as he is selling something he is quite happy.

The Motor World man looked at Simerson, a little but rugged man, and hesitated to believe that Simerson was old enough to be Little's father-in-law, but such is the case. Also there is a little Little who is very popular with his granddad and the whole establishment is operated with the "kid's" future as an object. Judging from the number of sales the firm pulls in, the youngster is a big asset for the Studebaker Corporation.

Odd Effect of Long Ignition Cables.

A wire which is used as a conductor of electricity may become so charged that it retains electricity after the flow from the source of supply has ceased; in other words, it has a static charge. If the wire is long enough it may contain a fairly strong static charge, and for this reason motors in which very long high-tension cables have been used have suffered all sorts of ignition trouble, due to the fact that the static charges would pass off across the plug points and ignite the charges at odd times and in highly puzzling fashion. Shortening the wiring has had the effect of remedying the trouble. The use of metal cable containers also breeds the same kind of trouble and should be avoided.

The Repair of High-Tension Wiring.

If the insulation of a high-tension cable becomes so chafed or otherwise damaged as to permit current leakage, the usual makeshift repair can be made with tape, and this will answer for a while; but it should be borne in mind that friction tape is not a particularly good insulator for currents of high voltage. Rubber tape is much better and will hold the current within bounds where the friction tape will not. In any case, an imperfect high-tension cable should be replaced at the earliest possible moment, as it is merely an invitation for trouble sooner or later.

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RECENT DEVELOPMENTS in ACCESSORIES

Two-Plug Principle Newly Applied.

Working on the theory that two sparks, occurring simultaneously at different points in the combustion chamber of a cylinder, will cause quicker, more thorough and more powerful combustion of the charge than a single spark, the Ideal Switch Co., Inc., of Plainville, Conn., has designed special plugs to be used for this purpose. As the accompanying illustration shows, the plugs are wired together in pairs, in series. One plug to which the magneto terminal is attached, is not grounded, both electrodes being insulated, while the second plug is grounded to the cylinder in the usual way, a wire being carried from the negative point of the first plug to the positive of the second. The current therefore must jump the points of both plugs to reach ground, and in so doing produces two sparks. The plugs are made in pairs, of any length and any thread, and are priced at $3.25 per pair.

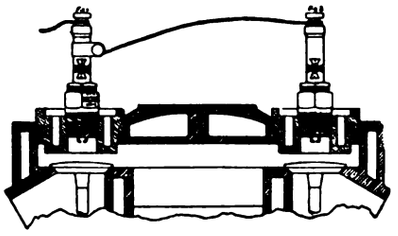
Concealed Hinge Comes from Detroit.

Like other details in automobile contsruction that showed weakness in earlier models, the hinges of side doors have received so much special attention from specialty manufacturers that the better types now are far removed from the flimsy fittings that once were common. One of the latest ideas in hinges is embodied in the device shown in the accompanying illustration and manufactured by Parsons-DeVleig & Co. ot Detroit. The chief advantages of the new hinge are that it can be applied inside the body and will not loosen with the swinging of the door; that the door may be lightly framed and yet strong because the hinge does not necessitate cutting away the angle flange of the panel; and that there are no wood-screws to be puttied up on the face of the pillar, which ensures a clean job. Labor is saved in putting on hinges, as they are applied while the door is in its closed position.

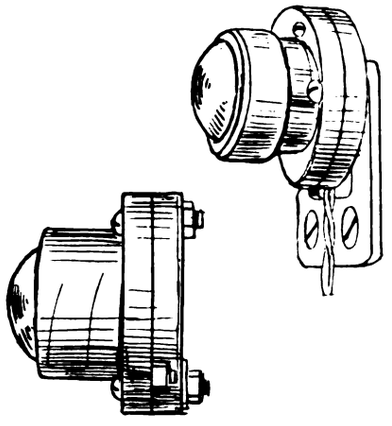
Dry Battery Lamps of Hard Rubber.

That indefatigable producer of multifarious automobile specialties, the H. W. Johns-Manville Co., of New York, just has brought out a real novelty in the lamp line—an automobile lamp which not only is claimed to give efficient and economical service on dry cells, but is made of hard rubber instead of metal. These J-M Mobilites, as they are named, are made in three types, one for insetting in the dashboard, one for an inside dashboard light and one for a tail light. A portable lamp is also made by attaching a spring clip and a long cable to a dashboard lamp.

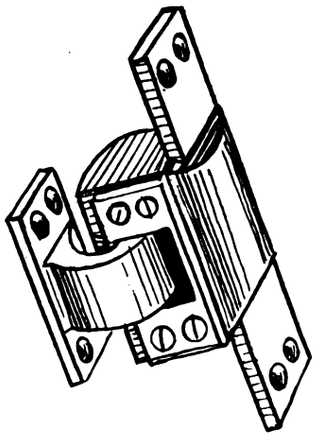
The accompanying illustrations show the general appearance of the lamps. The bodies, of hard rubber, are said to be extremely hard and durable; they do not require polishing, a wipe off with a cloth being all that is needed, and they are not as easily dented as metal bodies. Powerful reflectors and lenses serve to intensify the light produced by the tungsten bulbs. The tail-light has an opening in the bottom through which light is thrown on the license number, and also has a concealed switch, which carries out the requirements of the laws of the several States where the tail-light must be rontrolled from the rear of the car. The switch is so hidden that the meddlesome small boy cannot locate it. It is estimated that the cost of operating on dry batteries is one-third that of the usual lighting equipment. Six No. 6 dry cells are said to run a set of four lamps intermittently for from 80 to 120 hours.



IDEAL DOUBLE PLUG



J-M HARD RUBBER LAMPS



PARSONS-DE VLEIG HINGE

Air Compressor Resembling Gun.

For the purpose of marketing a gatling air gun, a new type of air compressor, invented by Charles Milne, the Schaefer-Frenzel Co. has opened offices in the Dime Savings Bank Building in Detroit. The officers of the company are: President, Jos. E. Schaefer, previously identified with the spark plug business; vice-president, H. Roy Haberkorn, a Detroit contractor; secretary-treasurer, Arthur W. Frenzel, who was until recently connected with the Disco Co. The company has a manufacturing plant on West Fort street in Detroit. The device is termed a gatling gun because of the arrangement of the cylinders, which somewhat resemble that of the W. K. bullet shooter, and also because of the force and rapidity of its operation.

To Make "Gas" and Oil Slot Machines.

The Indianapolis Corrugating Co., of the Indiana city of that name, is making ready to place on the market a money-in-the-slot gasolene vending machine. It is the invention of H. C. Johnson, of Knightstown, Ind., and takes the form of a sheet steel cylinder, about seven feet high by three feet in diameter, which will hold 100 gallons of gasolene. There will be slots for the insertion of 25-cent, 50-cent and one-dollar coins. There also will be a separate reservoir for containing lubricating oil, which likewise will be dispensed on the slot system.

Light-Dimmer to Fit all Cars.

The Suburban Lighting & Engine Co., of Toledo, Ohio, has developed and are placing on the market a dimming device for headlights. It is applicable to any make of car and retails at $2.50.

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"SHOOTING OVER THE HEAD" OF THE PROSPECT

Language That Is Not Thoroughly Understood by the Man to Whom the Salesman Talks Is Wasted Effort, Declares Reilly—Cites Dealer Who Thought He Was Making an Impression With Deep Discourse.

"Just around the next point."

Reilly twisted himself into a more comfortable position in his heap of cushions in the stern of the boat and repeated this answer, which he had been doling out parrot-like ever since the Sales Manager pulled away from the little lakeside summer resort with the avowed intention of rowing the party for a Sunday shore dinner to a spot that Reilly had suggested. It was "such a pretty little spot just down the lake a little way."

The wives of the two men, seated comfortably amidships, giggled a little as "just around the next point" came in response to the Sales Manager's now frequent inquiry as to how much further it was.

"My ——! Reilly," exclaimed the moist-browed oarsman, who came to a rest. "I've rowed around five or six 'next points' already. Enough's too much."

"You said you'd row if I paid for the boat, didn't you?"

"Yes, but——"

Sales Manager Balks at His Bargain.

"You said you liked to row, didn't you?"

"Yes, but——"

"Well what are you kicking about? I paid for the boat, didn't I?"

And the Sales Manager rowed, rowed, rowed.

Around the next point, in "that pretty little spot," he beached the boat, climbed out and threw himself on the grass under a tree.

"Come on, help unload; get some wood and start a fire," directed Reilly.

"Can't do it," replied the Sales Manager. "I'm a union oarsman. Rules won't let me do anything but row." And for the remainder of the afternoon he adhered rigidly to his rules

After Reilly had thrown the dishes and the remnants of the dinner into the lake the Sales Manager went back to his place under the tree and the others joined him. Everybody talked about nothing in particular until the two male members of the party got into a discussion of the single tax, which the factory man attempted to explain to he dealer. The explanation was full of "unearned increment," "ratio of labor to capital," and numerous other such terms.

"Do you understand it?" asked the Sales Manager.

"Oh, fine! But what's it all about?"

"Do you mean to say you can't get it?"

"I haven't yet."

"Oh, what's the use!" said the single-taxer in disgust.

"Agh," grunted Reilly. "You're just like Matt Sixby."

"You mean that dealer who failed last week?"



"WHAT ARE YOU KICKING ABOUT? I PAID FOR THE BOAT," SAID REILLY

"The same man; you've been shooting over my head just as he always did."

"Is that what took your hair off?"

"You sorehead! Not over my head; his customers' heads," snorted Reilly. "That's one reason he failed in business," he went on. "Of course, the generally accepted reason was that he couldn't sell cars enough, but the reason he couldn't was that he didn't go at it right."

Dealer Whose Language Was Too Deep.

"Now who's shooting over people's heads?"

But Reilly scorned to notice the sarcastic interruption, and went on: "Sixby, poor cuss, never had much selling instruction and wasn't able to figure things out himself. He used to be a tip-top expert repairman, and he never got over it. He always talked as if every one knew as much about cars as he did and when they didn't about 90 per cent. of what he said went for nothing."

"That's more intelligible."

"In selling a car one of the first things to be done, and probably the only thing, is to make a man want it, and no ordinary man who listened to Sixby could ever want what Sixby was talking about, because he had but little conception of what Sixby was saying. Matt sort of had an idea that to make an impression on a prospect he must hand out a lot of that stuff, that mystifying technical talk, full of engineering terms that mean about as much to an untechnical man as a lot of this Henry George single tax stuff does to me. I suppose, at that, that I might tumble to your explanation if you explained in plain English.

Technical Terms Failed of Object.

"Sixby loved to get a prospect and take him through the maze of a car's construction in a way that would make the ordinary man dizzy. He would start in with the motor and dole out a lot of information about bore and stroke and piston displacement and explain about the heat calories of gasolene and how and why the motor was economical, and he would be so damnably technical that sometimes I don't believe he actually understood himself what he was talking about.

"It didn't make any difference if the prospect showed interest in certain features of the car and was likely to base his purchase upon a proper sales demonstration of the qualities in which he was interested; Sixby just had to tell the story in his own way. He didn't realize that there is an A B C style of English that can be used in describing a car, or if he did realize he didn't use it. An automobile isn't so complex and mystifying that the average man isn't capable of comprehending its make-up if it is put up to him in the right way."

"I suppose you know all about the right way," butted in the Sales Manager.

"I sell a car now and then, don't I?" retorted Reilly.

"And I don't delight in stringing off the nice, big, long words that some people do, either," he continued. "Aside from using technical terms that are beyond the ken of the average man it is also very well to get outside of bookstore English with the ma-

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jority of people. Just because a man has money enough to buy a car is no sign that he was brought up on the dictionary when a boy. He may have been, but sometimes you hit one who wasn't; anyhow, this high-flown English hasn't the pulling power of the good, old Anglo-Saxon.

Best "Ads" Are Easily Understood.

"If you don't believe it just watch some of the best advertising that is being run to-day and scan it for words that the most ordinary man can't grasp. The best advertisers firmly believe in writing something that any man can understand, and advertising and salesmanship are very closely related, if they aren't the same, or nearly so. If you use simple language you are understood by everyone, both high and low, technical and untechnical; whereas if you begin to complicate matters you are likely to shoot too high for some of your marks."

"But don't you believe a salesman should ues good English and have a technical knowledge of the car?"

"By all means," answered Reilly, who moved along a couple of feet to get into the shade, which had crept away from him. "Using good English and using big words are two entirely different things, and you will find as a general rule that the man who knows the most about the language is the one who is best able to make his talk simple. It's the same way with the technical side of the question; the man who thoroughly understands the car generally is the man who can give the simplest explanation.

Could Have Been Clear if He Wished.

"Sixby was more or less of an exception, and I'm half inclined to believe that if he had wanted to he could have given a very simple and plain story, but he couldn't see that kind of talk as good sales work. He knew a car from the headlights to the trunk rack, and really understood it, too. He is the kind of man who should be able to explain everything about a car so that a man could grasp it. Most prospects don't care to go so deeply into the matter as all that, but Sixby made them, and then didn't make it plain to them. He dragged them into water that was too deep for them, and when they couldn't swim he wouldn't help them out. The result was that many of them instead of floating up to the contract drifted the other way.

"He had Proctor, the jeweler, on his prospect list before I did, and I must give him credit for putting the spark of desire in Proctor. I got Proctor through his wife; I demonstrated to her and when I had her just about won over I went after Proctor and pushed the sale over. Sixby had tried the same thing, but he gave Mrs. Proctor the same kind of a story he gave Proctor, and while Proctor may have grasped parts of the argument his wife was a couple of miles too far down the technical scale to notice it at all.

"What she wanted was something she could understand; she didn't give two hoots about the bore and stroke of the motor and the kind of steel in the springs, but she did want a car that looked good and that rode comfortably. Aside from that, about all she cared for was that it would run without breaking down, and her husband, being an untechnical sort of a man, wanted to be sure we would take care of him after he bought the car, and see that he didn't have too much trouble. I discovered while giving him a demonstration one day that while



"90 PER CENT. OF WHAT HE SAID WENT FOR NOTHING," ADDED REILLY

the car ran well while I had it, he wasn't so sure it would do so when he tried to run it. I simply 'sicked' him onto an owner who, when he bought, didn't know anything at all about a car, and that cinched him. I sold him on service alone.

"Showing Off" Big Words Vain Effort.

"Sixby could have done the same thing; anyone else could have done it. A man who really wanted to know all about the things that Sixby includes in his sales talks probably would have bought one of Sixby's cars before he would one of mine, and Sixby certainly made a few sales on just that line of dope; but you know and I know that this is shooting too high for the average man. What he wants is plain English, and I never have been able to see where a salesman gains anything by springing on a prospect a new word that the salesman hears of himself only a few days previously, and who springs it just to show the prospect that he knows it."

"Do you mean to infer that I drag in big words that I learned the day before yesterday?" demanded the Sales Manager.

"Well——" slowly began Reilly, who was interrupted by the return of the women of the party laden with woodland flowers.

"Isn't the union oarsman about ready to start back?" asked Mrs. Reilly.

"Certainly," replied the Sales Manager, without even moving from his comfortable position. "Will the dock wallopers kindly load the ship?"

Salesmen Preferred Watches to Cash.

Evidence that the money-grabbing spirit is not so rampant as is generally supposed is contained in the result of the Chalmers sales contest, the awards of which have just been announced. It was open to all Chalmers salesmen, of whom 300 competed in five classes, in each of which the prize was the same—a gold watch or $100 in gold—and, inspiring to relate, each of the five winners selected the suitably-engraved watch instead of the cash.

For the purposes of the competition, all towns in the country were divided into five classes, according to population and the number of Chalmers salesmen in each, the successful contenders being as follows: Class A, which consisted of the smaller towns, O. L. Blake, Keene, N. H.; Class B, M. W. Carroll, Jr., Waco, Tex.; Class C, Willard R. Sweet, Providence, R. I.; Class D, S. E. Murphy, Pittsburgh, Pa.; Class E, Harry N. Pyke, New York.

When Greasing May Prove Deceptive.

In screwing down grease cups to force oil to the places where lubrication is needed it usually can be judged how the grease is running by the resistance offered to the turning. But if dirt is allowed to accumulate on the threads the resistance so caused may lead to the belief that the grease is being well forced in when such is not the case. The moral, of course, is that the outside of the cup should be kept clean as well as the inside.

Disco Dimming Device is Developed.

Keeping abreast of the requirements of the times, J. W. Fitzgerald, the designer of the Disco electric starting and lighting system, has developed a device which, when a button is pressed, instantly softens the glare of the electric headlights and renders them unobjectionable for urban use. The new dimmer is now being made ready for the market.

Grossman's Window Contest Extended.

Because of delays in the delivery of lithograph material, the Emil Grossman Co.'s Redhead spark plug window display contest, which was to have terminated July 4th, has been extended to October 1st next. The Grossman company is supplying window dressing material to all contestants.

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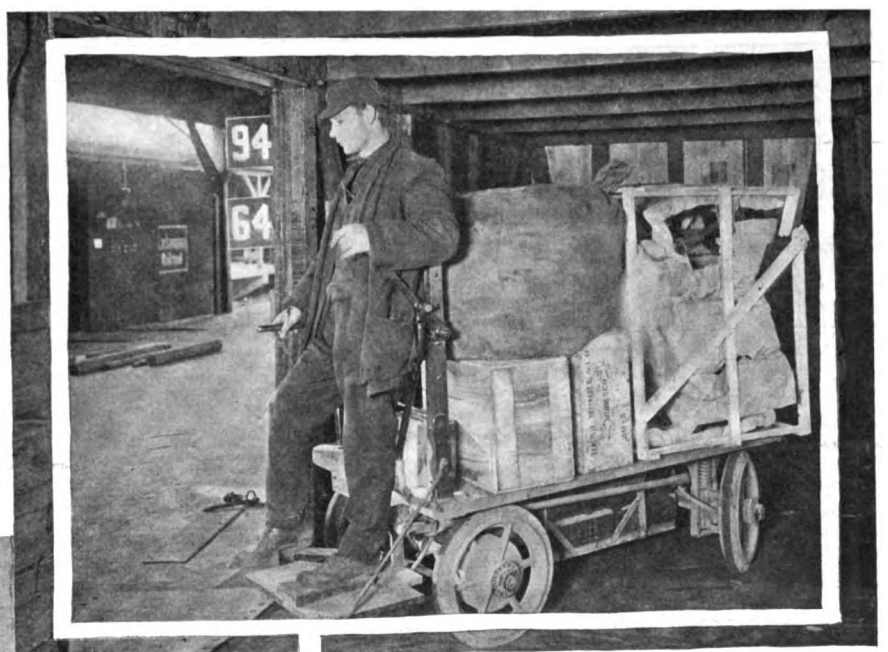
SUBSTITUTING ELECTRICITY FOR HUMAN MUSCLES

Little Trucks That Run In and Out of Freight Cars, Climb Gangplanks and Burrow in the Holds of Steamships and Make Manual Labor Seem Expensive—Machines and Tractors That Load and Unload Themselves.

Years ago, when freight transportation by rail and by water was slower than in the present high-speed age, when the amount of material handled was less and when people were less impatient to get and to get rid of their goods—when, in short, the whole business of moving freight was a comparatively deliberate and dignified matter—the sight of a long line of lusty laborers, each pushing before him a little, rattling hand truck and moving at a snail's pace, aroused no particular feelings of displeasure in the breasts of either shippers or transportation officials. The hand-trucking system was old, firmly established and answered the purpose. Anyway, there was nothing better in sight, even if anyone had thought of clamoring for an improvement.

But ships, locomotives and cars have increased in size and speed, freight has increased in quantity and the universal cry is for haste, and still more haste. The demand for time-saving has been so insistent that old-fashioned methods of long-distance transportation no longer suffice. And yet, despite the revolutions that have been brought about in practically every other branch of freight handling, straight through from the shipper's office to the warehouse of the consignee, the vast majority of freight sheds and freight piers still present the same old spectacle—long lines of lusty laborers with rattling, slow-moving hand trucks, with here and there a bigger hand truck for the bigger pieces of freight. Extra heavy pieces are painfully moved about on rollers or skids, or hitched to a block-and tackle and dragged about by main force and brute strength—if there is not a power winch handy—delaying the trucks and taking men away from other work.

There are freight sheds and piers, however, where the time-honored scene has been changed for the better, and while they still are comparatively few, and while the change is not complete in that there is an incongruous mixture of the old and the new, it is even easier to foresee the ultimate decline and fall of the hand-truck army than it was to foresee the decline and fall of the horse-drawn commercial vehicle. There are freight sheds where the ranks of the hand-truckers have been thinned, and in place of every half-dozen or so of missing hand-trucks there is a little, low, solid-looking electric truck that moves swiftly and quietly; that dodges in a way that appears reckless, but is not; that carries the heavy pieces without fuss or delay and can drag even more than it can carry; and that is handled by a man who has dropped the hand-truck to learn the levers.



SHOWING OPERATION WITHIN A RAILWAY FREIGHT CAR



GENERAL VEHICLE ONE-TON INDUSTRIAL TRUCK IN WAREHOUSE USE

It is some six or eight years since the little industrial truck began to make a serious impression upon the minds of the

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powers that rule the transportation companies, and it may be remarked that the progress made has been somewhat slow, due to the conservatism of most of the railroad and steamship men as well as to the inevitable difficulties that beset the development of a new type of machine. That the pressure from all sides is having its effect, however, is plainly evident from the busy factories of manufacturers of industrial trucks, the long and growing lists of users and the increasing number of terminals where the hand truck is giving way to the electric machine.

As for the uses to which an electric warehouse truck, or industrial truck, or utility truck—various terms are used for the little workers—they are well-nigh countless; not only will they do practicaly everything that hand trucks will do and do it much quicker, but they will do work that cannot be done with hand trucks. For instance, some machines will climb grades as steep as 25 per cent., and 20 per cent. is climbable for any of them with normal load. This means that where inclined ways have to be used for getting goods from one level to another a very steep incline can be used, which is not possible with two-wheeled man-propelled trucks. An electric truck will run in and out of a steamship when the state of the tide is such as to bring the gangplank to a grade that would be insurmountable to other carriers. Owing to this tremendous pulling power, not only will the machine carry a good load of its own, but it will haul, on the level, a train of trailers which may be loaded and unloaded while the power vehicle, which, of course, can earn no money by standing still, is running with other trailers.

Trucks that Load Themselves.

A special development of the industrial truck is the crane truck, which is practically the regular truck with an electric crane mounted on its platform. Such a machine will run up to a gondola car, reach over with its steel arm and pick up a load, hold it suspended and run any reasonable distance and then deposit the load at any point between the ground and the maximum lift of the crane. The crane truck will load its own trailers either from the ground, from a car or from a platform, back up and couple on, haul them to the unloading point, lift off the load and run back for more. A crane truck with a loading space in front of the hoisting gear will carry a "package" that is so long that it could not be handled otherwise, the overhang being supported by the hoist. There are so many uses, in fact, for the whole family of warehouse trucks that the mere recounting of them would fill a volume.

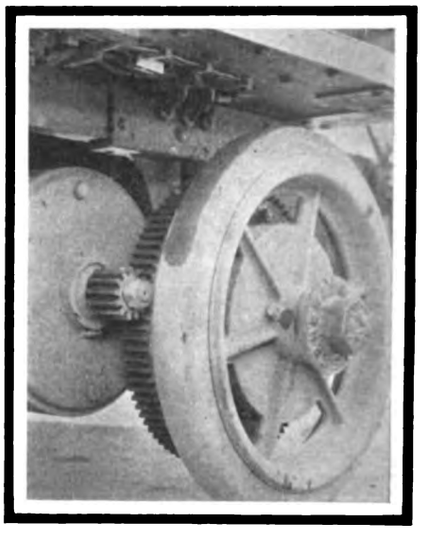


SHOWING OPERATION OF GENERAL VEHICLE SELF-LOADING CRANE TRUCK

One of the earlier applications of the machine was to the handling of baggage on station platforms, and this application is one that is of no small importance in view of the exact schedules on which trains are run, the large quantities of baggage that must be handled in short time limits and the very considerable distances that must be traversed in the huge modern stations. A load that would be totally impracticable for a hand truck, by reason of its weight, can be handled by a power baggage truck at a speed that men could not attain with a hand truck, and, for that matter, would not exert themselves to do so if they could.

A truck of the ordinary type will run right into a box car through the ordinary side doors without the slightest difficulty, and make the necessary turns with ease. There is no necessity for turning in a circle inside the car, for the little machines invariably are run with equal facility in either direction, and merely run in and reverse to run out. Some of the trucks, however, can actually turn completely around in a box car, having a minimum radius of only 7 feet, which is quite small enough for the purpose.

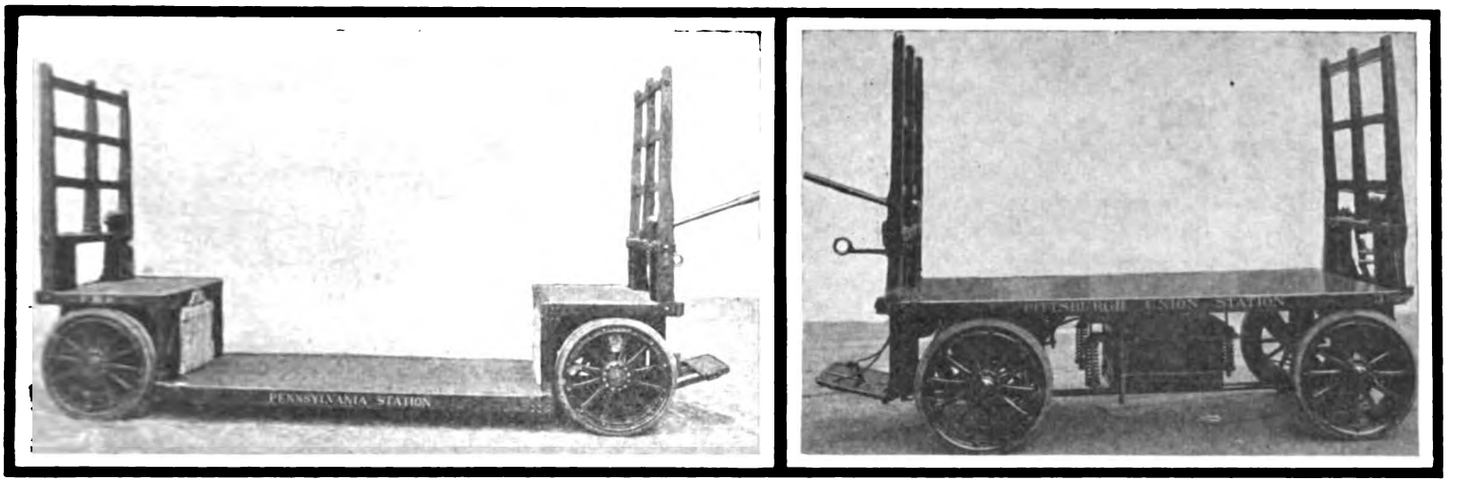
The volume of work that can be done by a crane truck is not a little surprising. In regular service, such a machine has picked up, moved 300 feet and deposited 60 barrels, each weighing 800 pounds, within an hour—and that with only two men, one running the machine and the other attending to the attaching and detaching of the tackle. A gondola car was cleared of 32 tons of castings in 5 hours, there being 360 pieces. In a warehouse a lot of boxes of hardware each box weighing half a ton, were lifted, carried 30 feet and neatly piled at the rate of 40 boxes an hour. A week's work for one of the crane trucks and its trailers in use at the Bush Terminal, Brooklyn, shows that the machine handled 7,570 packages aggregating 860 tons and averaging 230 pounds each, moving the stuff an average distance of 900 feet. The heaviest total load was 12½ tons. The cost, including the wages of the operator, interest, depreciation and electric current, was $24 for the week, or 3 cents for moving a ton 900 feet.



GENERAL VEHICLE DRIVE GEAR

In the handling of baggage there are various angles from which the truck may be viewed. The passenger likes to see his baggage whisked around in a quick, busi-

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TWO TYPES OF ELWELL-PARKER ELECTRIC BAGGAGE TRUCKS SHOWING DROP AND STANDARD FRAMES

ness-like way, and also appreciates the noiselessness of the rubber tires. The station master rejoices that there is less desperate haste to get everything on board before leaving time. The men who handle the baggage also appreciate the relieved tension at leaving time and, needless to say, they would much rather push a lever than a load. The accounting department, however, has an eye single to the dollars and cents involved, and naturally likes the looks of a report that shows too.

Two single trucks, handling miscellaneous freight in regular, everyday service, have handled 170,000 pieces of an aggregate weight of nearly 6,000 tons in 26 working days, hauling the freight an average distance of 158 feet at a cost of a shade more than a tenth of a cent per ton, figuring in interest, depreciation, maintenance, power and labor. It is not always an easy matter, however, to determine just how good electric trucks are, as compared financially with hand trucks, and this is particularly true with regard to some large users of both. The Hamburg-American steamship line, for instance, which uses 14 electrics at its Hoboken pier—Automatics, Elwell-Parkers and Lansdens — states that "The difference in running expenses between the automobile trucks and hand trucks on our piers cannot be determined in percentage, but where a large amount of freight has to be transported and a long distance must be traveled, there is a great saving in the use of automobiles."

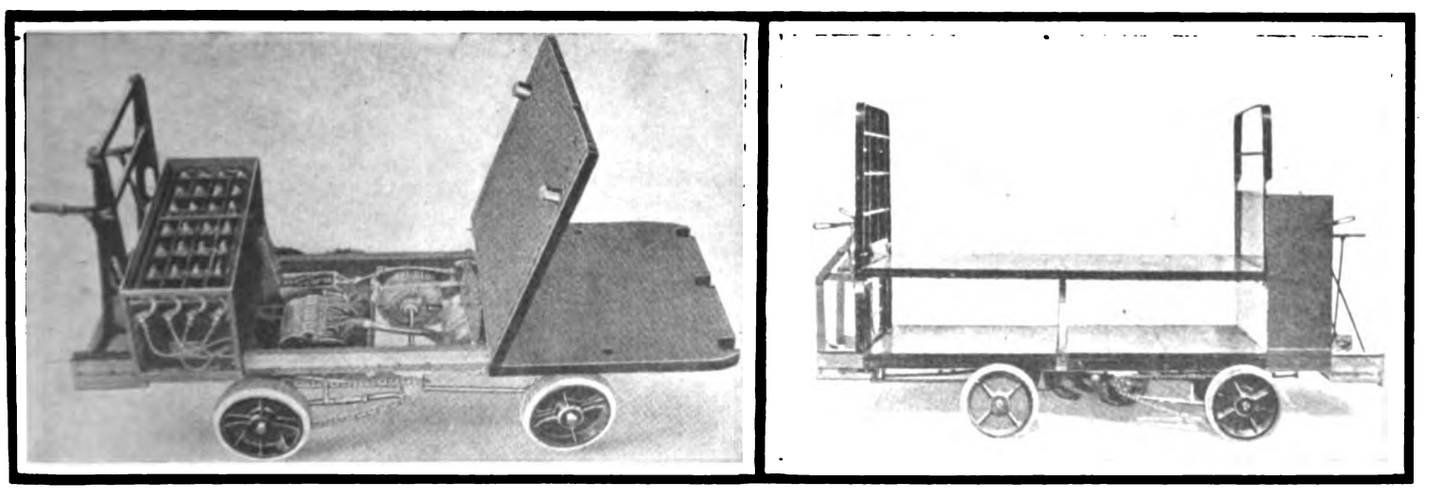
Why Construction Must be Rugged.

In the design and construction of these little machines a number of factors enter which do not apply, or at least not so forcibly, in the building of large motor trucks. The motive power is limited to electricity not only because of insurance regulations, but because electricity permits the simplest possible construction and the easiest and nearest to foolproof controlling means, and is best suited to the short-distance work that is involved.

Men employed to handle trucks that carry freight are not graduate electrical engineers, and it is only to be expected that they will do things to their trucks that must be extremely hard on the mechanism; yet the machines seem to thrive on it. The rule seems to be that if the operator thinks a thing should be done, he puts the truck at it. If the machine does it, all well and good. If not, no harm seems to be done. And it is in the very fact that the truck will stand such treatment that a large part of its value lies.

The sort of construction that makes it possible for a hard-working truck to stand what industrial trucks must stand is well exemplified in the General Vehicle Co.'s product, in which simplicity seems to have been reduced to its lowest terms. In the standard type with a capacity of one ton there is but one motor, one pinion on the motor shaft and one gear on a rear wheel.

The truck has an extreme length of 8 feet and a width of 4 feet, and has 28 square feet of loading space. The cast steel wheels, 20 inches in diameter and shod with 2½-inch solid rubber tires, are under the platform and out of the way. The motor is hung close to the right rear wheel which it drives and is behind the axle, and the battery of 44 cells is in the otherwise unused space under the middle of the platform.



AUTOMATIC WAREHOUSE TRUCK SHOWING MECHANISM AND A DOUBLE-DECK BAGGAGE VEHICLE

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Space on the platform being valuable, the operator is placed on a little shelf projecting from the rear end of the machine. It may be said, however, that the terms front and rear are used mainly for convenience, for the truck works equally well in either direction, the only difference being that in going one way the operator is in front of his load, and going the other way he is behind it. The end designated as the rear is that at which the driving and controlling apparatus and the operator's platform are grouped. The steering is done through the front wheels. Incidentally, the little shelf for the operator, as well as the peculiar braking system, are common to most industrial trucks and have been found admirably adapted to the service.

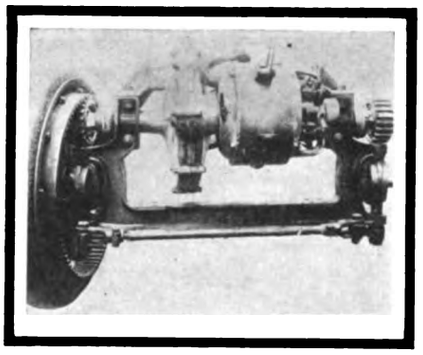
Control Devices Conveniently Located.

The controlling means consist of two levers with vertical movement so placed that when the operator stands on the platform they are within convenient reach of his hands; one is the steering lever and the other the controller lever. A brake pedal is so placed that the operator naturally stands with one foot on it, pressing it down flat on the floor, in which position the brakes are released. When he raises his foot a strong spring automatically applies the brakes, and at the same time an automatic switch cuts off the current. Thus all that is necessary for the quick stopping of the truck is for the operator to raise his foot from the brake pedal. The controller handle automatically returns to neutral position when released. The weight of the complete truck is the same as that of its load, or one ton. The speed of the truck on level ground, loaded, is 7 miles per hour and the radius on one battery charge 25 miles. For exceptionally heavy grade work and other severe service two motors are employed, driving both rear wheels.

Construction of Self-Loaders.

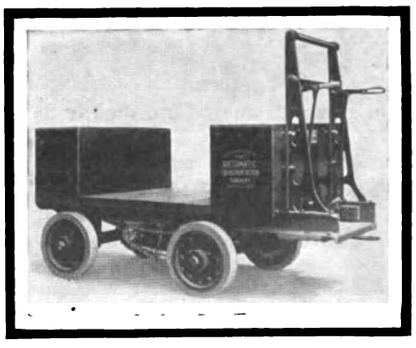
The General Vehicle crane trucks are of two types—one, the older, embodying more features of the conventional road electric truck than the newer type, which is identical,, in many respects, with the small machine described. The older machine has the appearance of a small electric truck with a seat for the operator and, just ahead, a crane with its electric motor and hoisting gear. The body is not designed for load carrying. The crane will lift a maximum load of one ton, while the truck is commonly used as a tractor and will exert a drawbar pull of 2,000 pounds, sufficient to haul from three to six trailers, according to the loads, grades and distance to be covered.

Drive to the rear wheels is by single motor with double reduction, the first by Morse "silent" chain, which is enclosed, and the second by roller chains to the rear wheel sprockets. Running light, the machine will make 9 miles an hour; with a ton hanging on the crane it will make 7 miles an hour; and towing 5 tons on trailers, 5 miles an hour. These speeds are, of course, figured for level ground. The battery, of 44 cells, 13 plates per cell, is in a box under the driver's seat, and back of it is a tool box. The wheelbase is 64 inches and the tread 60 inches.



ELWELL-PARKER TRANSMISSION

The latest crane truck is built by the Sprague Electric Works of the General Electric Co., and, as already stated, incorporates the cardinal features of the small industrial truck; it has the same simple motor drive, using two motors, and the same platform arrangement for the operator. It is, of course, considerably larger, however, having an over-all length of 10 feet and a weight of 4,500 pounds; the width is 4 feet. The crane, with its operating mechanism, is mounted at the driver's end, which is the steering end of the truck, the driving motors being at the opposite



AUTOMATIC MILL TRACTOR

end. The boom has a maximum height of 15 feet when in its highest position and reaches over a platform space that will accommodate a considerable load; in fact, the machine is termed a self-loading truck. Like the older crane truck, the new machine has a lifting capacity of one ton. The boom does not swing sideways, however, but has only a lifting movement. The turning radius of the machine—13 feet—is sufficiently short to make it easy to maneuver the whole truck instead of swinging the boom, which would be impracticable, when carrying a load, with a narrow tread. The platform is so low that it can be run under the body of an ordinary horse-drawn or motor truck, enabling the crane to pick up loads and lift them off the big truck with facility and celerity.

Steers With All Four Wheels.

In the Elwell-Parker machines, which are manufactured by the Elwell-Parker Electric Co., of Cleveland, Ohio, the driving and steering mechanism presents features of particular interest in that they permit four-wheel steer and, while only two wheels are driven, all four could be driven if it was considered advisable to do so. The company builds a variety of types, but all include the same driving and steering mechanism. Another feature is made of unusually low-hung platforms; the frames are dropped, either between the front and rear wheels, or over a pair of very low rear wheels so that the tail of the truck is not raised. In the high platform trucks, used for baggage and express work where station platforms are lower than the car floors, the wheels are high and the platform is above them. The very practical platform control system, with foot brake normally set, is employed.

The central feature of the driving system is the universal pinion. Final drive is by countershaft, divided by a differential, and universal pinions to internal gears bolted to the rims. The pinions are, to all intents and purposes, universal joints mounted on the ends of the shafts, the outer members taking the form of pinions. The internal gears on the wheels are mounted so that a line drawn through the axis of the steering knuckle pivot will strike the center of the gear teeth and, of course, the center of the pinion, which thus constitutes a universal joint turning on the same center as the steering pivot. The system is the same as that used in that biggest of electric tractors, the Pennsylvania Railroad machine designed by Buckwalter, who also designed the Elwell-Parker drive. A single motor is employed, driving by spur gear to the counter-shaft carrying the dlifferential and universal pinions.

Truck Carries Twice Its Weight.

Though weighing under a ton, the Elwell-Parker freight car truck has a carrying capacity of 2 tons. The battery box is at the driver's end and is raised above the comparatively large front wheels. The flat top of the battery box is available as part to the counter-shaft carrying the differ- high platforms the batteries are underslung.

An unusually large variety of models is

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manufactured by the Automatic Transportation Co., of Buffalo, N. Y., whose machines, by the way, seem to have found especial favor with automobile manufacturers, the Pierce-Arrow, Hudson, Cadillac, Overland, Franklin, Timken-Detroit and other car and part makers being on the list of users. Besides the standard freight truck, there is an extra low freight truck, low and high baggage and express trucks, double-decked baggage and express trucks and three tractor types. The battery is carried in a box on one end of the platform, except where a double battery is employed, when there are two battery boxes, one at each end, or else superposed at one end, according to the requirements. The standard drive is from a single motor through Morse "silent" chain to differential countershaft, and thence by side chains to the rear wheel sprockets. The wheels are 16 inches in diameter and are made up of ribbed cast steel centers with rubber or fabric tires. In the extra low type with wheels under the platform the diameter of the rear wheels is considerably less, but the construction is the same.

Control System That Minimizes Danger.

The control of the vehicle, which is located in the customary way from a little seat platform, includes several features that are out of the ordinary. While the application of the brake automatically cuts off the current, the current cannot again be turned on until the brake is released, so that the possibility of applying both brake and driving power at the same time is eliminated. On the other hand, the cutting off of the current automatically applies the brakes. The motor armature runs on ball bearings—in fact, the truck is ball-bearing throughout, with the exception of the countershaft, which runs on roller bearings.

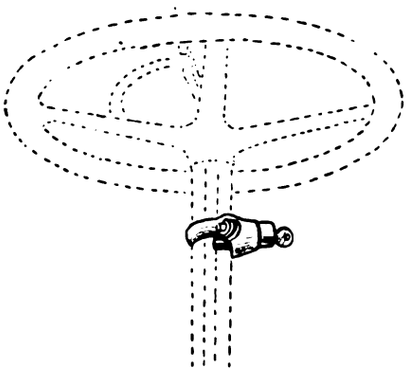
On the tractors, which are designed to haul up to five tons, on trailers, there is a battery box at each end of the platform. In this model the control is arranged as in the other standard trucks—on a little platform leaving the space between the battery boxes available for load carrying. In this case the driver stands between the battery boxes and steers with a wheel on a vertical column.

Old Methods Hinder Progress.

It is a matter of no difficulty to appreciate that the more general use of trucks of the types described is not a little hindered by the fact that most of the concerns who employ them do so in conjunction with the older freight-moving methods which, as in the case of installations of the motor trucks, puts the power machine in an unfavorable position. Rome was not built in a day, however, and it is only reasonable to anticipate the ultimate exodus of the mule and the hand-truck pusher at the end of the procession headed by the truck-horse.

Steering Gear Locked Against Thieves.

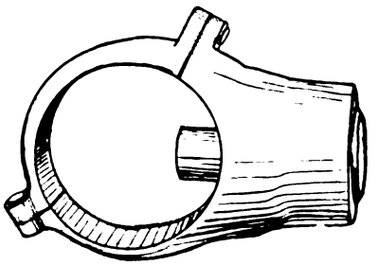
One of the peculiarities of the automobile is the fact that there are so many factors that are vital to its operation—that is to say, there are so many things without



NO-RISKO LOCK APPLIED

which the machine cannot run. Ignition, fuel, clutch, gearset, steering gear, all must be operative in order to use the car, and all have been seized upon by manufacturers of locking devices as media for temporarily tying up the machine, the newest device for locking the steering gear being the "No-Risko" steering gear lock, which is shown by the accompanying illustrations and which is made by the C. J. Rogers Mfg. Co. of Philadelphia.

The device consists of a band which encircles the steering column and carries a plunger which enters a hole drilled through the steering column tube and into the shaft;



NO-RISKO STEERING GEAR LOCK

the plunger is held in the locked position by a Corbin lock. To lock the gear it is necessary only to push the plunger into the hole, where it "clicks" in and stays until unlocked with the key. To apply the lock the wheel is turned to the desired position, preferably with wheels at an angle, and the holes drilled. The lock is put on in two halves, with the plunger in the holes; the halves are united by special machine screws which are tightened up until the heads break off, leaving only flush countersunk surfaces which cannot be tampered with.

About that Apperson "Jack Rabbit."

That story about the man who picked up a dog on the grip of his crank handle has been accepted as fact so many times there appears to be no particular reason to doubt the story which just has been dealt out in manifold form by the Apperson publicity man of how the term "Jack Rabbit" comes to be linked with the name of the cars turned out by the Apperson Bros. Automobile Co., of Kokomo, Ind. There may be some dispute as to whether this rabbit story antedates the dog story or vice versa, but in any event the principle is substantially the same.

The story of the rabbit explains why the term "Jack Rabbit" is applied to Apperson cars and why a little metal animal of this species perches upon the radiator of every one of these Kokomo vehicles. Before gasolene cars were as common as they are now a sportsman took an Apperson car to the Dakotas to hunt, carrying guns and fish spears. But one morning the party forgot to put in its reserve supply of ammunition, and when food became scarce it became necessary to get game of some sort, so a spearsman, standing on the running-board, speared rabbits as the car pursued them across the prairie.

When the car returned, someone said "Where'd you get the jack rabbit?" The driver didn't know what was meant until he stepped to the front of the car and saw a "jack rabbit" impaled on the crank handle and frozen stiff. The theory that the car went so much faster than the rabbit that the crank pierced his body is given as the basis for the nickname of the cars. Anyway, it's a good story, but tough on the rabbit.

Misunderstandings About Tire Heating.

While it often is considered a fact that tire heating is due largely to the compression, and consequent heating, of the air due to passing over obstacles in the roads, a little consideration shows that this hardly can be true. It is well known that, while air is heated by compression, it is cooled in an exactly corresponding degree by expansion. Therefore when a tire strikes a bump the air in it is compressed and heated, without doubt; but immediately afterward the air resumes its normal pressure and temperature. It is usually considered that the heating of tires is due to friction between the tire and the road and to the internal friction of the material of which the tire is made. Friction between the shoe and the tube also is responsible for a certain amount of heating.

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BRITISH ENGINEERS DECRY CYCLECARS AND STARTERS

(Continued from page 15.)

stances—bores have at the same time been reduced in a great many cases. These small engines start a great deal more easily than do larger ones, of course, and I have heard it said that the better quality of fuel we get also results in easier starting, though I do not think there is anything in this assertion. But whether the fuel is any better or not, I think you will agree that our carburetters are better, for the average American car will not run half as far on a gallon of commercial fuel as will the average British car.

"Complexity" Viewed with Alarm.

"Another reason why starters are not so favorably looked upon is that comparatively few persons in England drive their own cars; nearly every owner has a chauffeur who is also a gardener or a man of all work; in addition to driving the car he also washes it and polishes what brass there is and cares for it generally. And as the owner never has occasion to start the motor himself, it probably never crosses his mind that an engine starter might be a desirable adjunct. Electric lights we have and have had for some time, and to my mind their steadily increasing popularity is doing more to stimulate the demand for starters than is anything else, for it is so easy to combine the functions of electric lighting and starting.

"Still, I think it will be a very long time before engine starters are used at home to the extent they are used in America; there seems to be a prejudice against them because of their apparent complexity; this, too, is unusual in view of the British conception of a simple car, judging by American standards. But no one seems to like the idea of adding wiring and rods and levers and things to a car already pretty replete with them.

Starters Used Mostly American.

"We use quite a few engine starters in England, but most of them are of American manufacture. The Ever Ready spring starter, for instance, is being put on as special equipment by a number of car makers, and in the electrical line we have the Delco, of course, and the Rushmore, these two being the most conspicuous. On the whole, spring starters are preferred to starters of any other kind, because they are simple and light, and as they are put in place outside the hood they do not tend to increase engine complexity to any appreciable extent. After spring starters, pneumatic devices are preferred, I think, though with the increase of electric lighting the compressed air devices bid fair to be ousted."

Turning from engine starters to cyclecars, Prestwick confirmed American suspicions that the so-called British cyclecar boom is more noise than substance. As Prestwick makes small single- and twin-cylinder engines for motorcycles and light cars of the cyclecar variety, he is uncommonly well situated to "speak by the book." He has been so little impressed by the alleged boom, that in conversation with the Motor World man, he said he considered the demand so unstable and limited in its possibilities that he was making no special effort to cater to it.

Cyclecar "Boom" Largely Noise.

"The demand for cyclecars," he added, "appears to be good and to be increasing slightly, but it is almost wholly an assumed demand and as such it seems certain to collapse with dire results to some one in the not far distant future. The principal trouble seems to be that there are no really good cyclecars on the market, with possibly one exception, and that one really is an automobile. The little cars, which logically should be carefully designed and strongly made to withstand the abuse to which they are bound to be subjected are, for the most part, not properly designed and are built of unsuitable materials. As such, they do not appeal strongly to the motorcycle rider who is accustomed to high-class workmanship, and the same holds good for the automobile owner.

"In my opinion, a real demand, though a limited one, is bound to come for the cyclecar people are doing a lot of advertising and are disposing of a lot of cars. It would seem that this is sure to stimulate a real demand, for I can't see how those who purchase the present varieties of cyclecars can be satisfied with them and, being dissatisfied with them, they are nearly certain, if they like them at all, to demand something better; and when they do demand it they will catch us all unprepared. We will be unprepared because we cannot build cyclecars and build them to sell for the prices the purchaser expects to pay. To do so would require quantity production of the American kind, and this is impossible. Personally, I cannot see how a cyclecar ever can be produced that will compete successfully with the Ford car and with some of the other British light cars that at last are making their appearance. That is the whole story in a nutshell."

Poor Construction a Drawback.

Of the others who vouchsafed opinions on the cyclecar movement, none could let in more light than has been let in by Prestwich; his statements were practically reiterated in most cases, and practically all of the engineers were of the opinion that very few indeed of the cyclecars now on the market are worthy of serious consideration because of their faulty design and poor workmanship, which, it was pointed out, is due almost entirely to the low prices at which they must be sold if they are sold at all. The concensus of opinion was a beautiful paradox to the effect that until something better is produced the cyclecar movement never will amount to anything, and that nothing better can be produced at the price!

H. Massac Buist, a representative of the British press who accompanied the British engineers, held similar views to those expressed by Prestwich on what he styled the "much mixed starter problem."

Makers Apparently on the Fence.

"Just at present," he said, "the manufacturers scarcely know where they are at, to use American language. Some buyers want starters and some would not have them as a gift, for they view their complexity and their added weight with alarm. The result is that car manufacturers are on the fence, so to speak. They hesitate to say anything against starters for fear they may have to retract later, and most of them do not know enough about such devides to recommend them to their customers; hence they fight shy of them as much as possible.

"There seems to be little reason for putting starters on small cars, anyway, unless they are used by doctors, for instance, who make a great many calls and are continually stopping and starting their motors. And on the big cars, the chauffeur always starts the engine.

Value as Accident Preventers Overlooked.

"As a preventive of accidents?" he repeated after the Motor World man, and continued: "That's one thing no one ever seems to think of; they figure that as they don't have to start their engines 'they should worry' to use your own expression; but they do not figure that even if the chauffeur should break his arm they are still liable in a way, for no one is going to be inhuman enough to discharge a man who cannot work because of an accident; hence they keep him on in his disabled condition and he is a dead loss until he is again able to do his work. As for themselves, they never seem to think that some day a motor may stall in the centre of a grade crossing with a train bearing down upon them and no chance in the world to get out of the way; such accidents have been few during the past year or so, which probably accounts for the little attention paid to the value of engine starters under the circumstances."

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GARAGE COMPRESSORS FOR CONTINUOUS SERVICE

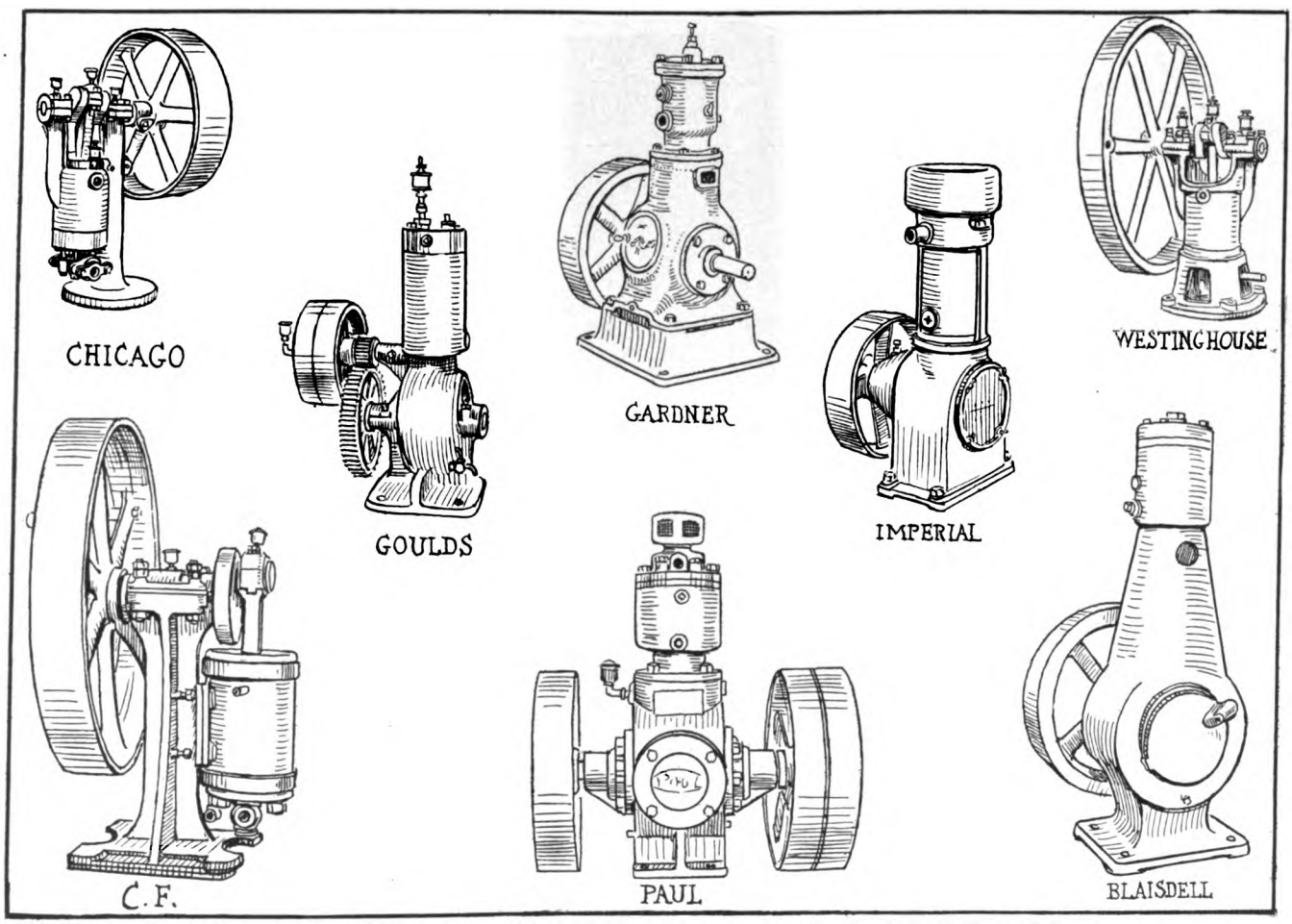
Conditions Which Necessitate the Use of Water-Cooled Cylinders and How They Have Been Met by Manufacturers—Functions of the Automatic Unloading Device Made Plain—Wherein Different Pumps Differ.

If Billy Rea, whose story was told in Motor World last week, had owned a considerably larger garage, he probably would have chosen a water-cooled air compressor to do the work for which he purchased his air-cooled pump. As it is, his one-cylinder air-cooled compressor is plenty large enough for his needs; it supplies all the air he can use and he is particularly proud of it because it never gives him any trouble. It has been running now, off and on, for several months and he has not had so much as to put a wrench to it.

The service is intermittent, as already has been told; the pump is started in the morning and a storage tank filled and one filling generally suffices till noon, when the pump is again connected and the tank refilled. At night, just before the shop is shut down, the pump is again started up, and it never has been found necessary to start it again until the following morning; the air in the tank suffices for night service.

It is not unlikely that if Rea attempted to run his compressor continuously, which would be necessary if the demand for air were considerably greater than it is, serious consequences would follow; it might overheat to the point where its piston would "freeze" in the cylinder, and it is altogether likely that the lubricating oil would be burned up in comparatively short order. The pump was not designed for continuous service; it was designed to be used just the way Rea uses it, which is exactly the reason he gets so much satisfaction out of it. Most air-cooled pumps will run upward of 15 hours without overheating and some of them are designed to run continually, though in this case the pressure obtained seldom reaches 100 pounds to the square inch.

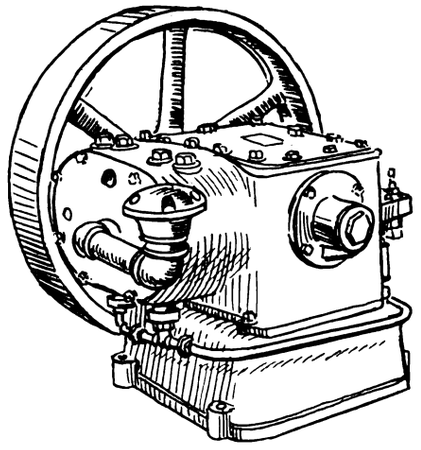
Where a pump is to be used continuously, however, and higher pressures are required, it is the better part of wisdom to rely on water cooling; most manufacturers produce both types, and few recommend air cooling for other than intermittent service



EIGHT TYPES OF WATER-COOLED COMPRESSORS SUITABLE FOR THE AVERAGE GARAGE

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or low pressure if the pump is to be run without periodic rests to permit it to cool. Water cooling has the advantage that the compressor may be run continuously at maximum capacity without danger of impairing its efficiency; and the water-cooled air compressor is no more complicated than is the water-cooled automobile motor. In fact, it may be a great deal simpler for there is no necessity for a radiator or a pump, and the place of the former being taken by a strong galvanized iron tank, and the place of the latter being taken by thermo-siphonic action. It is possible, of course, to pipe the water into the jacket from the supply main and permit it to drain away into the sewer, thus further simplifying matters. This method is expensive, however, and should not be resorted to except in case of dire need and lack of space for a water tank. In some cases, compressors are made with water reservoirs integral with their cylinders when



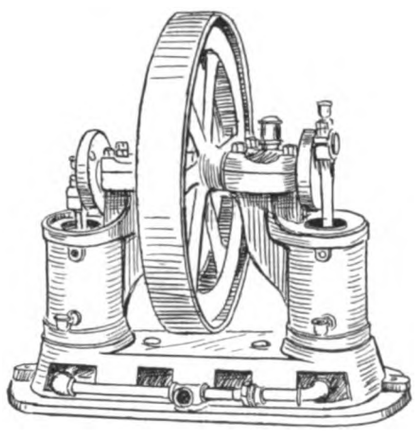
NATIONAL ENCLOSED TYPE

neither tank nor running water is necessary, of course.

Reservoir Contained in Cylinder Head.

The Imperial compressor, produced by the Ingersoll-Rand Co., of New York City, for instance, is of the latter type, the whole top of the cylinder head being a water reservoir which communicates with the cylinder jacket by means of ports, thus providing a very efficient circulation of water by thermo-siphonic action; under ordinary service conditions, which can be taken to mean that the compressor is run at a pressure of not to exceed 100 pounds continuously, or at 200 pounds pressure intermittently, one filling of the reservoir generally will suffice for a whole day. The cylinder measures 4½ x 5 and the capacity is 14.9 to 23 cubic feet of free air a minute at 325 to 500 revolutions. Lubrication is carried on automatically by splash.

With both the Paul compressor, produced by the Fort Wayne Engineering & Mfg. Co., of Fort Wayne, Ind., and the Gardner compressor, which is made by the Gardner Governor Co., of Quincy, Ill., either a reservoir or running water must be used, the water being piped into the bottom of the cylinder jacket and out the top in the usual manner. One important difference between these two pumps is that whereas the Paul has a poppet suction valve and a ring type exhaust valve, the Gardner has as an intake valve a port in the cylinder uncovered by the piston. Another important difference is that the Paul is lubricated with oil on the splash system, a separator being used to prevent oil be-



JACOBSON TWIN CYLINDERS

ing pumped into the tires or the tank, and the Gardner is lubricated throughout with grease which is contained in hollow connecting rods. Both pumps are made in several sizes and neither requires a great deal of floor space.

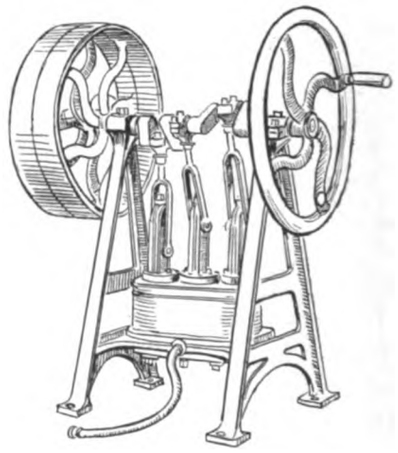
Keeping Out Garage Dust and Dirt.

The Blaisdell compressor, which is made by the Blaisdell Machinery Co., of Bradford, Pa., is distinctive in that it is perhaps more fully enclosed than are any of the others, and for this reason it should prove particularly suitable for use where necessity places it in a position exposed to considerable dust and dirt. Lubrication is completely automatic and the pump can be run continuously at from 250 to 400 revolutions a minute without fear of dangerous overheating; the pressure capacity is 250 pounds to the square inch; the weight complete is 150 pounds.

The name Westinghouse always has been connected with pneumatics, of course, and the little single-cylinder air compressor that is illustrated herewith is made with all the care and precision that marks other Westinghouse products. As may be seen by the picture the compressor virtually stands on its cylinder, which is continued upward to form the bearings for the crankshaft. Both inlet and exhaust valves are made of hard brass and are contained in the cylinder head, which is at the bottom. At 250 revolutions a minute—the cylinder dimensions are 3 x 4 bore and stroke, respectively—and working against 180 pounds pressure, which is maximum efficiency, approximately one horsepower is required to drive it. The maximum capacity is 4.1 cubic feet of air a minute at from 180 to 250 pounds pressure. The Chicago Pneumatic Tool Co.'s compressor is somewhat similar to the Westinghouse in the arrangement of its parts and is made in several sizes varying in capacity 6 to 15 cubic feet of free air a minute.

Accessibility of Valves a Feature.

The Carruthers-Fithian compressor, built by the Bessemer Gas Engine Co., of Grove City, Pa., like the Chicago Pneumatic Tool Co.'s, has its valves in a very accessible location, and their removal for regrinding or replacement does not necessitate the breaking of air connections. It is made in



GLEASON-PETERS PUMP

two types—3 x 4 inch bore and stroke—one having one cylinder, the capacity being three cubic feet of free air a minute, and the other having two cylinders and double the capacity; both are designed for 150 pounds to the square inch working pressure.

For comparatively small capacity—a little over three cubic feet of free air a minute at 150 revolutions—and high pressure suitable for operating compressed air tools and for engine starting, the Goulds Mfg. Co., of Seneca Falls, N. Y., has developed the back geared pump shown by the accompanying illustration; it is water-cooled and is designed for continuous service at 150 pounds pressure. For this reason the construction is very rugged and clearance has been reduced to the minimum; both valves are steel and are located in an accessible position in the cylinder head.

As is the case with air-cooled pumps, greater capacity requires one of two things: Either the pump must be run at greater

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speed or a pump having more than one cylinder must be used. The speed at which a compressor can be run is limited and in no case should the recommendations of the manufacturer be exceeded. It is possible, of course, to increase capacity temporarily by speeding up the pump, but the practice should be avoided. For continued greater capacity the logical means to adopt is to install a larger pump and where floor space is limited and a practically constant stream of air is necessary, nothing remains but to use a multi-cylinder pump. With a large size single-cylinder compressor, it will be understood, the speed of operation must be reduced proportionately, and as there then exists a greater interval between the intake and compression strokes of the piston considerable intermittency will follow, though this more or less objectionable feature can be overcome by the addition of a storage tank of small capacity.

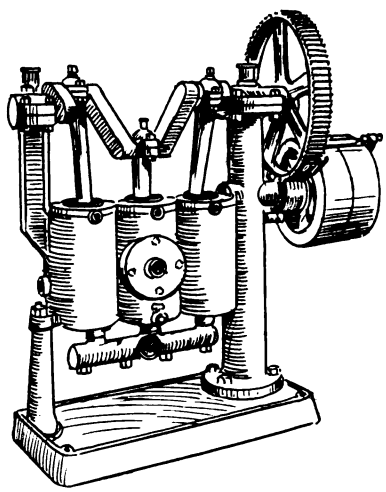
Advantages of Multiple Cylinders.

In the Jacobson compressor, which is illustrated herewith and is produced as one of a complete line by the Jacobson Mch. Mfg. Co., of Warren, Pa., the cylinders are located one on either side of a heavy combined flywheel and driving pulley, and as one cylinder is compressing while the other is on the suction stroke, no wider belt is required to drive the double machine than would be required to drive a single-cylinder machine of the same dimensions; obviously, however, it delivers twice the amount of air. With 3 x 4-inch cylinders, the capacity of the machine at 200 revolutions is 6½ cubic feet of free air a minute and the obtainable pressure is 200 pounds. The weight of the complete plant is 340 pounds. Owing to the limited space between the cylinders, tight and loose pulleys are not supplied.

The National Brake & Electric Co., of Milwaukee, Wis., manufactures air compressors in great variety for nearly every branch of industrial service, and among them the pump shown by the accompanying sketch, is particularly suitable for the medium sized garage where air is used for operating tools and cleaning as well as for inflating tires. As may be seen by the pictures, the whole of the mechanism is completely enclosed, the only exposed part being the heavy flywheel which serves also as the driving pulley. The pump has two cylinders and the capacity ranges, according to dimensions, from 12 to 75 cubic feet of free air a minute. For continuous service, an unloading device is fitted. Its function is to adjust the valves so that when a predetermined pressure is obtained the compressor simply operates idly and no power other than that required to overcome friction, is used to drive it. Immediately the pressure drops below a predetermined limit, the compressing function automatically is taken up again.

Pump That Utilizes Oil Strainers.

The Gleason-Peters Air Pump Co., of 255 Classon avenue, Brooklyn, N. Y., is another company that produces a variety of types of air compressors, the one illustrated being suitable for a large garage and requiring only a very small amount of power to operate—at maximum capacity one-half horsepower is needed. The pump differs from all of the others in that it has three cylinders, for which reason, it is pointed out by the makers, half the power is required to drive it that would be required to drive a single-cylinder pump of the same capacity. The cylinders, base plate and water jackets are all cast integral of gray iron and hence the possibility of leakage is eliminated. Tight and loose pulleys and a flywheel are fitted, and the latter is equipped with a handle to permit the inflation of tires by hand. To prevent the entrance of oil into the tires, where no storage tank is employed, an ingenious and simple type of strainer is used; it consists of a separable shell with wire gauze at both ends and may be inserted anywhere in the air line; it is easily opened to be cleaned and is made of brass.



SPACKE BACK-GEARED PUMP

Triple Cylinders and Back Gearing.

To obviate the necessity for small line shaft pulleys and consequent slippage, the Spacke three-cylinder compressor, produced by the F. W. Spacke Machine Co., of Indianapolis, Ind., is back geared as shown by the accompanying sketch; the smaller pinion is made of fiber to reduce noise to the minimum. The speed of the tight and loose pulley is 600 revolutions a minute and of the pump crankshaft 150 revolutions. The dimensions of the cylinders are 3 inches bore and 5 inches stroke and at rated speed the capacity is 9 cubic feet of free air a minute; the working pressure is 125 pounds; the weight of the machine complete is 260 pounds. For continuous service, an automatic unloading device is regularly fitted and may be set for any pressure from 50 to 150, or more, pounds.

Starter vs. Horn Consumption.

Whether or not manufacturers of motor horns will endorse the figures, the fact remains that the tests recently made in the laboratories of the Disco Co. in Detroit were interesting, for it is stated as a result that the average daily current consumption of a Disco electric starter, attached to a six-cylinder engine, is less than that of a motor horn. It was found that a six-volt current of 5 amperes was required to sound the horn, while the starter took 78 amperes at the same voltage to turn the motor over at 134 revolutions per minute. Figuring on five starts a day and an average of one second per start, and on 50 blasts of the horn per day, at 4 seconds per blast, the starter consumes 1.08 amperes and the horn 2.08 amperes.

About the Universal Joint Boot.

Among the little things on a car that stand a good chance of being neglected are the leather boots strapped over universal joints. Not only are the boots important as dust excluders, but they serve, in some joints, at least, to catch small screws or pins that may get loose. Straps should be kept tight and defective boots replaced.

Doubtful Results from Mixed Fuels.

Experiments with mixtures of benzole and kerosene as fuel indicate that some little trouble is likely to arise from the partial separation of the two liquids after standing over night. The kerosene goes to the bottom and makes starting a difficult matter. While on the road vibration keeps the fuels well mixed.

Sharpening Chisels on Oil-Stones.

Sharpening a cold chisel on an oil-stone may seem an unnecessary refinement, but it is not infrequently done by mechanics who have a great deal of chipping to do. The claim is that the edges are better and considerably more lasting than if used just as they come from the grindstone.

To Distinguish Iron from Steel.

A piece of tool steel can be distinguished from a piece of iron by its peculiar sharp ring when struck with a piece of metal. If the sounds produced by striking a cold chisel, for instance, and a piece of ordinary iron are compared they will not readily be forgotten.

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1,041,350. Pneumatic Tire for Vehicle Wheels. Eugene Richard Riedinger, London, England, assignor of one-half to Andrew Fraser, London, England. Filed July 2, 1912. Serial No. 707,318. (Pneumatic tire between inner and outer rims.) 1 claim.

1,041,449. Electric Driving Gear for Motor Vehicles. William Henry Douglas, Belleville, N. J., assignor to Healey & Co., New York, N. Y. Filed May 18, 1910. Serial No. 561,982. (Electric motor drive through universal joint and worm.) 1 claim.

1,041,460. Spring Attachment for Vehicles. George Graybill, York, Pa. Filed July 30, 1910. Serial No. 574,745. (Auxiliary spring device on axle, supporting car springs.) 2 claims.

1,041,477. Electrical Ignition Apparatus for Internal Combustion Engines. Gottlob Honold, Stuttgart, Germany. Filed Dec. 18, 1907. Serial Uo. 407,048. (Magnetic spark plug with make-and-break device.) 13 claims.

1,042,702. Shock-Absorbing Hub for Vehicle Wheels. John Walker Tilton, Atlantic City, N. J., assignor of one-half to George Hoefer, Clement J. Adams, and Nicholas W. Young, Atlantic City, N. J. Filed May 1, 1912. Serial No. 694,554. (Cushion hub with radial helical springs.) 1 claim.

1,041,708. Carburetter. William K. Andersen, New York, N. Y. Filed Sept. 23, 1910. Serial No. 583,-338. (Auxiliary air valve with compound springs.) 7 claims.

1,041,739. Tire. William G. Chipley, New Orleans, La. Filed April 10, 1911. Serial No. 620,037. (Pneumatic tire enclosed in grooved rim and carrying an outer non-puncturable rim or tread.) 1 claim.

1,041,829. Spring Wheel Tire. William B. Mallory, Hermosa, S. D. Filed May 12, 1910. Serial No. 650,932. (Wheel with radial coil springs and spring braces between inner and outer rims.) 1 claim.

1,041,835. Spark Plug. John J. McIntyre, Hartford, Conn. Filed Oct. 31, 1911. Serial No. 657,702. (Expanding bushing for locking insulating core.) 4 claims.

1,041,879. Apparatus for Heating Automobiles. Gaston Ruffier, New York, N. Y. Filed March 17, 1909. Serial No. 483,929. (Exhaust heated radiator and regulating valve.) 2 claims.

1,041,902. Dirigible Headlight. Louis C. Thoeming, Benjamin H. Thoeming, and Edwin A. Anderson, Newcastle, Wyo. Filed May 7, 1912. Serial No. 695,715. (Revolving support for dirigible headlight.) 1 claim.

1,041,910. Spring Wheel. Arthur M. Tully, Woodville, Fla. Filed March 14, 1912. Serial No. 683,789. (Wheel with C-shaped spring spokes.) 1 claim.

1,042,017. Carburetter. Albert R. Long, Los Angeles, Cal. Filed Sept. 21, 1911. Serial No. 650,654. (Carburetter with fuel intake in air valve stem.) 2 claims.

1,042,018. Rotary Engine. Walter G. Macomber, Los Angeles, Cal. Filed April 5, 1911. Serial No. 619,173. (Revolving cylinder motor with cylinders and shaft parallel.) 5 claims.

1,042,026. Tire Casing. Edwin B. Nathan, New York, N. Y. Filed Oct. 3, 1910. Serial No. 585,051. (Protecting covering for extra tire.) 2 claims.

1,042,076. Fuel Admission Valve for Internal Combustion Engines. Armand Bandy Breuer, Budapest, Austria-Hungary. Filed May 11, 1912. Serial No. 696,802. (Spray nozzle enclosed in expansion chamber.) 4 claims.

1,042,077. Carburetter. Clement Brown, Birmingham, England. Filed Oct. 4, 1909. Serial No. 520,-936. (Carburetter with semicircular port valves.) 6 claims.

1,042,137. Dirigible Headlight. Fritz Muller, Cologne, Germany. Filed June 8, 1911. Serial No. 631,-988. (Headlight connected with steering gear.) 5 claims.

1,042,154. Automobile Jack. Herbert W. Seely, Seligman, Ariz. Filed Mar. 30, 1912. Serial No. 687,332. (Jack for raising front and rear wheels simultaneously.) 8 claims.

1,042,156. Heater for Steering Devices for Motor Driven Vehicles. Earl D. Shannon, Alpena, Mich. Filed July 8, 1912. Serial No. 708,305. (Electrically heated steering wheel rim.) 7 claims.

1,042,166. Tire Chain. John G. Stewart, Vandergrift, Pa. Filed June 24, 1912. Serial No. 705,411. (Tire chain with diagonal brace chains.) 2 claims.

1,042,178. Tire. Alvin G. Walker, Pacific Junction, Iowa. Filed Oct. 24, 1911. Serial No. 656,395. (Tire formed of semicircular springs.) 1 claim.

1,042,181. Internal Combustion Engine. Richard Trotter White, Richmond, Va. Filed Feb. 17, 1912. Serial No. 678,232. (Two-cycle motor with two-diameter cylinder and piston.) 3 claims.

1,042,214. Vehicle Wheel. Henry S. Grace, San Francisco, Cal. Filed Apr. 16, 1910. Serial No. 555,-858. (Resilient wheel with springs between inner and outer rims.) 2 claims.

1,042,303. Safety Automobile Crank. Curles T. Williams, Trenton, N. J. Filed June 27, 1911. Serial No. 635,671. (Anti-kick crank.) 8 claims.

1,042,320. Shock Absorber for Road Vehicles. Arthur William Chapman, Birmingham, England. Filed Apr. 10, 1912. Serial No. 689,764. (Auxiliary spring of the volute type.) 2 claims.

1,042,347. Muffler formed of concentric perforated cylinders.) 1 claim.

1,042,377. Tire Lock for Automobiles. Bernard A. Alperin, New York, N. Y. Filed Aug. 4, 1911. Serial No. 642,231. (Lock for securing spare tires to running board.) 1 claim.

1,042,392. Automobile Tire. Clifford L. Butler, Chicago, Ill., assignor to American Steel Tire Company, Milwaukee, Wis., a Corporation of Wisconsin. Filed Dec. 29, 1910. Serial No. 599,994. (Flexible metallic tire.) 11 claims.

1,042,409. Clutch. John W. Denmead, Akron, O., assignor to The Diamond Match Company, Chicago, Ill., a Corporation of Illinois. Filed July 30, 1909. Serial No. 510,397. (Clutch with rack-and-pinion operating mechanism.) 6 claims.

1,042,426. Tire. William Francis Gaul, Jersey City, N. J., assignor of one-half to E. H. Fahey, Philadelphia, Pa. Filed July 31, 1911. Serial No. 641,670. (Cushion tire with air chambers and springs.) 4 claims.

1,042,473. Automobile Lamp. Frank C. Parsche, Chicago, Ill., assignor to F. X. Parsche & Son Co., Chicago, Ill., a Corporation of Illinois. Filed July 18, 1910. Serial No. 572,420. (Glass globe with one-half acting as reflector.) 1 claim.

1,042,478. Rim. Albert D. Reid, West Chester, Pa. Filed May 22, 1912. Serial No. 698,885. (Quick detachable rim.) 2 claims.

1,042,479. Rim. Albert D. Reid, West Chester, Pa. Original application filed May 22, 1912, Serial No. 698,885. Divided and this application filed July 20, 1912. Serial No. 710,580. (Quick detachable rim.) 2 claims.

1,042,502. Locking Device for Securing Automobile Robes, Overcoats, and the Like. Joseph S. Thompson, Mill Valley, Cal. Filed May 21, 1912. Serial No. 698,777. (Lock for securing robes, etc., to rails.) 1 claim.

1,042,503. Internal Combustion Engine. Frederick A. Thurston, Lynn, Mass. Filed Sept. 29, 1908. (Two-cycle motor on the three-port principle but with intake port to cylinder divided into two ports.) 3 claims.

1,042,505. Internal Combustion Engine. Willard Irving Twombly, New York, N. Y., assignor to Twombly Motors Company, New York, N. Y., a Corporation of New York. Filed Oct. 5, 1910. Serial No. 585,369. (Two-cycle motor with two pistons in one continuous cylinder both connected to crankshaft passing through cylinder.) 2 claims.

1,042,528. Carburetter. Clement Brown, Birmingham, England. Filed Nov. 25, 1910. Serial No. 594,-115. (Carburetter with ports controlled by piston valve which moves longitudinally and rotates at the same time.) 6 claims.

1,042,540. Reversible Internal Combustion Engine. Orville H. Ensign, Los Angeles, Cal., assignor of one-half to Paul H. Blades, Los Angeles, Cal. Filed Aug. 29, 1906. Serial No. 332,546. (Gasolene motor with oscillating cylinders.) 3 claims.

1,042,548. Shield for Transmission Gearing of Automobiles. Albert A. Glenz, Fall Creek, Wis. Filed Feb. 3, 1912. Serial No. 675,239. (Flexible shield winding automatically on and off rollers.) 1 claim.

1,042,572. Explosive Engine. Alfred Lee, Bellingham, Wash. Filed Oct. 24, 1911. Serial No. 656,-380. (Motor with separate scavenging piston containing valves.) 8 claims.

1,042,592. Resilient Tire. Jackson M. O'Rear, Birmingham, Ala. Filed Oct. 27, 1910. Serial No. 589,-376. (Tubular spring for resilient tires.) 2 claims.

1,042,619. Spark Plug. Robert A. Tranahan, Toledo, Ohio. Filed Feb. 1, 1912. Serial No. 674,789. (Spark plug containing priming valve.) 3 claims.

1,042,672. Starting Device for Auto-Engines. Alvin F. Harrison, Topeka, Kan. Filed Feb. 9, 1912. (Engine starter of the gas-priming type.) 1 claim.

1,042,675. Rotary Explosive Motor. Maximilian J. Helmes, East Orange, N. J., assignor of one-half to William D. Sargent, West Orange, N. J. Filed Apr. 9, 1908. Serial No. 425,999. (Radial cylinders in rotating casing.) 9 claims.

1,042,698. Electrically Propelled Vehicle. Harry Ward Leonard, Bronxville, N. Y. Original application filed Mar. 2, 1903, Serial No. 145,686. Renewed May 26, 1908, Serial No. 435,119. Divided and this application filed Apr. 13, 1908. Serial No. 426,638. (Current control for electric vehicles.) 41 claims.

1,042,712. Rotary Valve for Engines and the Like. Albert E. Moorhead, Chicago, Ill., assignor, by mesne assignments, to American Rotary Valve Company, Chicago, Ill., a Corporation of Illinois. Filed July 28, 1911. Serial No. 640,966. (Motor with rotary valve over cylinder heads.) 19 claims.

1,042,714. Driving Mechanism for Traction Engines. Walter S. Morton, Portsmouth, Ohio, assignor to Samuel F. Dunkle, trustee, Harrisburg, Pa. Filed Oct. 10, 1911. Serial No. 653,915. (Chain drive for traction engines.) 6 claims.

1,042,722. Antiskidding Device. Turner W. Simmons, Bridgeport, Conn., assignor of one-sixth to William C. Bowers, Bridgeport, Conn. Filed Nov. 24, 1911. Serial No. 662,146. (Non-skid chains with rubber-covered balls.) 5 claims.

1,042,740. Igniting System for the Engines of Automobiles. James G. Winsor, Detroit, Mich. Filed Aug. 7, 1911. Serial No. 642,591. (Circuit adjuster for ignition systems.) 5 claims.

1,042,814. Circuit breaker for Electric Ignition Devices. Arthur R. Mosler, New York, N. Y., assignor to A. R. Mosler & Co., New York, N. Y., a Corporation of New York. Filed Jan. 15, 1906. Serial No. 296,230. (Rotary timer with eccentric action.) 2 claims.

1,042,818. Spark Plug. Albert J. Parchem, Lancaster, Pa., assignor of one-half to William F. Lebzelter and one-half to John J. Thompson, Lancaster, Pa. Filed Jan. 25, 1910. Serial No. 540,045. Renewed Sept. 18, 1911. Serial No. 649,819. (Spark plug with loose ball in lower end.) 6 claims.

1,042,875. Lock for Vehicles. Ephraim M. Bishop, Kingston, N. Y. Filed July 10, 1912. Serial No. 708,633. (Lock and chain mechanism for connecting front and rear wheels.) 1 claim.

1,042,888. Hydrocarbon Engine. Alphonse Butsch, St. Lucia, British West Indies. Filed Oct. 29, 1910. Serial No. 589,783. (Two-cycle motor lubricating system.) 2 claims.

1,042,925. Windshield for Automobiles. John L. Kennedy, Washington, D. C. Filed Oct. 6, 1910. Serial No. 585,710. (V-shaped windshield with upward hinged extensions.) 4 claims.

1,042,975. Internal Combustion Engine. John M. Sailer, Janesville, Wis., assignor of one-half to William Musser, Iowa City, Iowa. Filed May 10, 1910. Serial No. 560,403. (Motor with separate pumping cylinders.) 11 claims.

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Holds World's Stock Championship

Fastest Stock Mile

National

Holds World's Record for Fastest 500 Miles in Competition

Our Answer

Uncharitable rumors, prompted by either malice or ignorance, have charged the National Motor Vehicle Company of Indianapolis with unfairness and unsportsmanlike conduct during the recent 500-mile race.

These defamatory insinuations, all the more vicious because not definite nor in the open, include:

That the *National* people conserved the speed of the winning car to keep it from breaking the *National's* record.

That the *National* people did work in their factories prior to the race, for the foreigners as against the Americans.

That the *National* employees bet heavily on Goux and therefore worked to have him win.

If anyone could have done the impossible, and held Goux back, it still does not explain why some of the other drivers did not get in front, win the race and break the *National's* record.

M. Goux had a safe lead. It is conceded that he did not have to struggle as hard to keep first place as others did to keep secondary positions.

Any attempt to besmirch the *National's* reputation only magnifies its marvelous performance and emphasizes how easy it was for Goux to win and how others failed to surpass the record of either Goux or the *National*.

It is true that the National Company helped the Peugeot team. *That* is sportsmanship. If we had refused, we should have been censored even more severely. It is equally true that the National Company also helped *seven other teams*, both foreign and American, without favoritism. We simply extended the courtesies naturally expected from a resident to a visitor.

At the beginning of practice for the race the National Company offered its services to any and all competitors. This, too, in the face of the fact that every bit of assistance rendered by the National Company to a contender made it all the more possible for these contenders to break the *National's* record.

The National Company tried to be fair, and was fair.

Frequently in the past the National Company has helped competitors in races where *National* cars were entered. The National Company believes in helping the cause of good, clean sport and building it up. In helping cars this year the National Company lived up to its lifelong policy.

Our racing competitors in years past who know our attitude and who know how scrupulously we adhere to the rules of fair play only laugh at these charges. They know how empty and unjustified they are.

To the man who is familiar with racing and with the management of such clean sportsmanship events as the 500-mile race the insinuations direct and indirect against the National Company are both ridiculous and shamefully indicative of ignorance.

The greatest of all reasons why these charges are untrue is the unimpeachable and honestly won reputation of the National Company.

The National Company considers it a rare tribute when foreigners seek its advice and assistance in a matter so important as this race. We also consider it an honor that Americans came to us. We will extend the same assistance again under the same circumstances.

William Faroux, the Peugeot consulting engineer, in a signed article in Motor Age, explains the whole situation. He gives credit where it is due, praises Americans for clean sportsmanship, admits the *National's* record is one worthy to attempt to lower and equally hard to achieve.

The only way the *National* is "to blame" for the record not being lowered is that it made the record. In so doing it gave the world a criterion for speed, power, reliability and stamina.

At no time during the race was the *National's* record reached by any car.

***National*, 78.72 miles per hour (1912 winner)**

1913 winner, 75.92 miles per hour

1911 winner, 74.61 miles per hour

Five models, $2750 to $3400

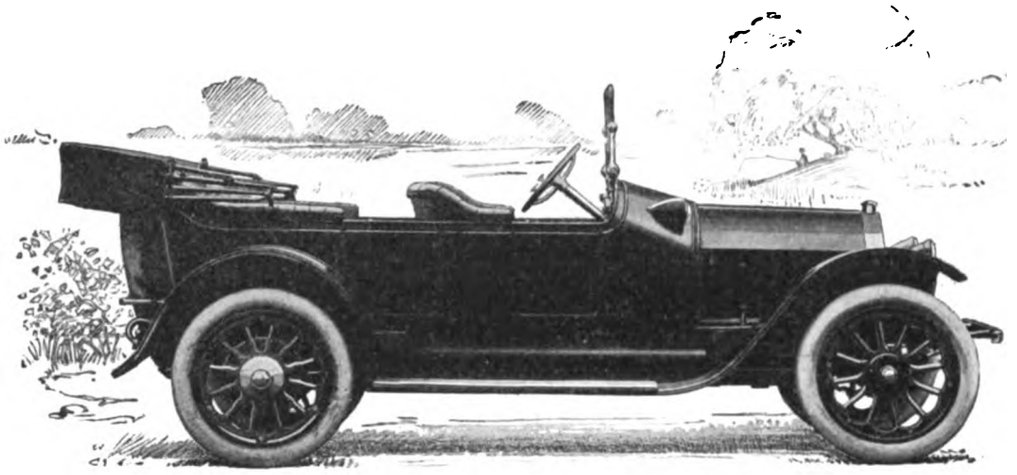


Write for Free Booklet Giving Story and Pictures of the 500-Mile Race

Five models, $2750 to $3400

National Motor Vehicle Company - Indianapolis, Indiana

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PATHFINDER TOURING CAR

40 horse power *120 inch wheelbase*

1914 New Pathfinder Models ready for delivery NOW 1914

¶ The phenominal sales record made by the Pathfinder "40" during the first five months in 1913 makes it possible for us to offer you 1914 models RIGHT NOW.

¶ This is not an announcement of new models for early delivery but means that we can actually *deliver* your cars *upon receipt of your order.*

¶ Pathfinder sales show an increase of 117% this season over a corresponding period of last year, because Pathfinder cars have gained a reputation for reliability that has been spread broadcast by present Pathfinder owners.

DEALERS:—Realize This Advantage

¶ You know how hard it is to sell old models against the new.

¶ You know how much competition will be eliminated by actual ability to deliver 1914 models at once.

¶ This is the exact position we are in today, due to the sales momentum created by Pathfinder cars already in use.

¶ This opportunity may come but once in a lifetime. Tell us what territory you can cover. We want you with us--act quickly as every minute counts.



THE MOTOR CAR MFG. CO.

1138 Division Street, INDIANAPOLIS, U. S. A.

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to Automobile Manufacturers Who Have Contracted for



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THE LONG HORN



WHAT THE LONG HORN SELLING AGENCY MEANS TO THE DEALER

WHILE THE VARIOUS TYPES OF LONG HORN WARNING SIGNALS have their largest demand from pleasure car owners, it is of interest to note that owners of any type of self-propelled Vehicle or Motor Boat or Motorcycle, find in the LONG HORN the ideal Warning Signal for all purposes.

THIS ALL AROUND SIGNAL, hand actuated and mechanically operated, supplying instantly, adequately and unfailingly a deep, sonorous, commanding warning for Pleasure Cars, Commercial Cars, Motor Boats, Motorcycles, Electrics and Steamers alike.

IT IS THE ONLY DEPENDABLE WARNING SIGNAL with adequate volume and intensity that may be applied to Motor Car, Motor Boat or Motorcycle in a few minutes' time and at no installation expense.

OUR DEALERS EVERYWHERE are enjoying liberal profits, every sale is a downright pleasure and every owner your friend. NOTHING TO GET OUT OF ORDER, no item of upkeep, no possibility of losing a warning signal sale if you have a LONG HORN stock.

A SPECIAL MODEL FOR EVERY CAR, BOAT or MOTORCYCLE

PRICES, $10 to $19

THE G. PIEL COMPANY, 13th Street and Boulevard, Long Island City

Attaching Rooms: 51 West 53rd St., New York

BRANCHES:
BOSTON, MASS., 109 Massachusetts Avenue.
PHILADELPHIA, PA., 1427 Vine Street.
SAN FRANCISCO, CAL., 532 Golden Gate Avenue.
PORTLAND, ORE., 329 Ankeny Street.
DETROIT, MICH., 510 Majestic Bldg.
BUFFALO, N. Y., 20 Goodrich Street.
CHICAGO, ILL., 1322 Michigan Avenue.
SEATTLE, WASH., 924 East Pike Street.
DENVER, COLO., 15th and Curtis Streets.
LOS ANGELES, CAL., 1229 South Olive Street.

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SIMPLEX

Exceptional Agency Opportunity

The completion of the new factory of the Simplex Automobile Company at New Brunswick, N. J., increases the production of Simplex Cars to the point where an expansion of selling territory is possible.

Few Simplex agencies have been established in the past because the limited output would not allow a large enough allotment to make the proposition a paying one.

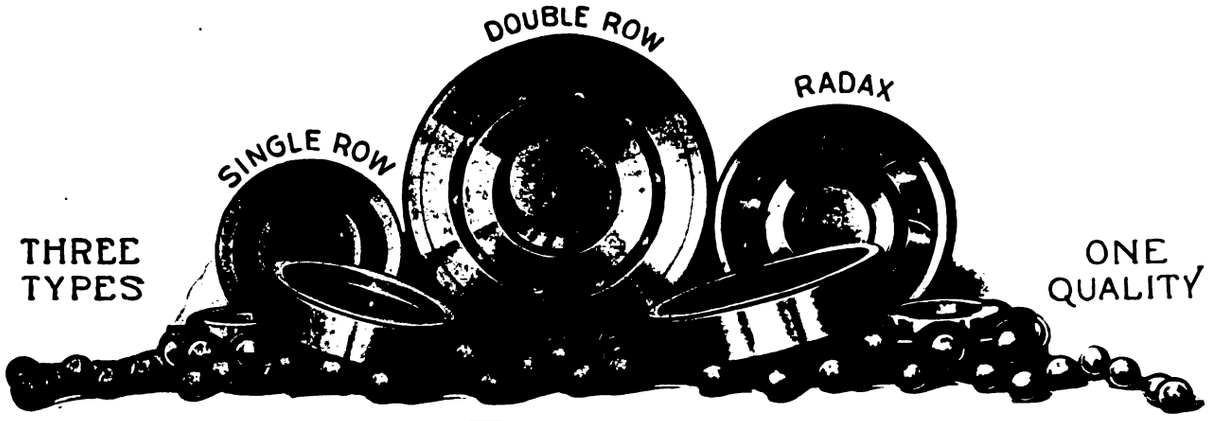
We are now ready to close agency arrangements in desirable territory for the popular Simplex Cars. The line includes the shaft-driven 38 H.P. chassis and the enclosed chain-driven 50 H. P. chassis, both of which are mounted with luxurious, smart bodies of exclusive design, following the latest European lines. Inquiries concerning an agency will receive prompt attention.

SIMPLEX AUTOMOBILE CO.

240 West 59th Street, New York, N. Y.

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AMERICAN MADE FOR AMERICAN TRADE



NEW DEPARTURE

BALL BEARINGS OF DISTINCTION

THE motor car manufacturer is constantly seeking to put into his car that which will quickly sell it.

The fact that eighty per cent. of the American-made motor cars sold this year are equipped with New Departure ball bearings at once proves the superior quality, efficiency, and service of this bearing, and gives it distinction.

The ball type of bearing is conceded to be a more thorough eliminator of friction than any other type. This means that engine energy is conserved to the utmost, economizing fuel, repair, lubrication, and maintenance cost.

The car which was driven on Long Island, June 20, by S. G. Averell, the well-known automobile and efficiency engineer, for a distance of 86.6 miles on a gallon of gasoline, was mounted on ball bearings.

The purchaser of an automobile in which New Departure ball bearings are used knows that the designer and manufacturer have selected a bearing equipment that is the highest embodiment of correct principles of mechanics and skilled workmanship, worked out in materials guaranteed for strength and durability.

Send for instructive literature.

The New Departure Mfg. Co., Bristel, Conn.

Western Branch, 1016-17 FORD BLDG., DETROIT

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The Biggest Motor Truck Order Ever Placed

80 Alcos for the U. S. Mail—A $225,000 Sale

THE Postal Transfer Service, Inc. has just placed the largest order for motor trucks on record—an order for 80 Alco trucks to haul U. S. mail—a sale approximating $225,000.

This marks the greatest tribute ever paid to any motor truck. For the contract was awarded to the Alco over leading makes of motor trucks, gasoline and electric, after exacting tests by Government inspectors.

Consider for a moment these facts:

These 80 Alco trucks in a year will be required to cover 1,000,000 miles; to haul 1,550,000 tons—157,680,000 cubic feet—of United States postal matter. End against end, this fleet of 80 Alco trucks extends 1810 feet—a quarter of a mile.

Great are the proportions of these figures. But more important is the nature of the service. It is day in and day out, running on railroad schedule, making trains, operating nights as well as days—24 hours a day at times—over all sorts of roads, in the sizzling heat of summer, in the winter blizzards—*and always the necessity of clocklike regularity.*

None but a superior truck could qualify for tasks such as these.

The Alco truck is no experiment in this type of service—it has been proven in the service of express companies. The American Express Company has 86, the Long Island Express 20 and so on.

And no type of duty is more severe than express service.

Further, it is only natural that the verdict should fall to a product of the American Locomotive Company. 51,000 of its locomotives have hauled you, your families, the things you eat and things you wear—safely and on time; in high altitudes; in low altitudes; and in many latitudes.

This is going to be a hot summer. It will cause many millions of dollars loss in horse flesh. Better anticipate by looking into Alco trucks for your business.

Catalog will be sent on request.

ALCO

Motor Trucks

6½ ton 5 ton 3½ ton 2 ton

Address Division E

AMERICAN LOCOMOTIVE COMPANY, - 1886 Broadway, NEW YORK

Builders of Alco Motor Trucks, Alco Motor Cars and Alco Taxicabs

Movers of the World's Goods since 1835 Capital, $50,000,000

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Get In Before The Gate Closes

The day after we made our first announcement of the fact that we were ready to assign territory on the phenomenal new Wahl Car, we received 147 telegrams, besides a flood of letters from dealers in every part of the country, applying for territory.

This we regard as a very natural result of such astonishing value as we offer in the Wahl Car. Experienced automobile men know that such a car as we are building will be snapped up by the public in very short order. It represents exactly what so many people are looking for—a real automobile, rich in appearance, modern in design, complete and high-grade in equipment, at a price hitherto considered impossible.

Here is the point for you, Mr. Dealer. It will take but a little more time to get all the dealers we can possibly supply for 1914. 5,000 cars will be our limit for this coming season. We would like to make more, and take care of everybody, but our facilities are limited. Our advice to you is to wire at once, or write if you prefer, and get your territory secured.

August Delivery---Three Year Contracts

Cars are beginning to come through the factory now. Soon they will be coming faster, and we will be able to promise all our dealers first shipments some time in August.

Here is another way in which we protect our dealers' interests. We allow you to make a three-year contract. Do you realize what that means? It means that after your first successful season, when you have worked up a nice business in your locality, it will **not** be taken from you and given to some one else. You get the benefit of your labors when you handle the Wahl Car.



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Here Are the Real Facts About the Wahl Car

Never in the history of the automobile industry has so much value been given for such little money. Here at last is the realization of the prophecy that has been made for years that "some time someone would build a real motor car at a price within the reach of the poor man." Here is a car that will please the rich man, at a price that everybody can afford.

MOTOR. Four Cylinders, L head, cast in pairs; cylinders, 3¼ in. bore, 5½ in. stroke. Silent, efficient and flexible. Crankshaft of drop forged high carbon steel, valves fully enclosed.

UNIT POWER PLANT. The Motor, Clutch and Transmission are built and assembled in one unit.

CLUTCH. Nine-inch disc-type Clutch with Raybestos-lined discs. Quick, easy engagement without grabbing.

TRANSMISSION. Sliding selective type, four speeds—three forward and one reverse—quiet, smooth-running; equipped with annular bearings. Transmission and Clutch readily accessible and adjustable.

IGNITION. High-tension Bosch Magneto, set spark. Simplest and most efficient Ignition at all speeds for the expert and the novice.

STEERING. Full worm-and-gear type, Irreversible, with 17-inch Steering Wheel.

REAR AXLE. Semi-floating Salisbury with Hyatt roller bearings. Bevel Drive and pinion of extra large size and strength with ingeniously designed housing of great strength and light weight.

FRONT AXLE. "I" Beam Section drop-forging, drop-forged steering arms and knuckles with large drop-forged spindle.

BODY. Aluminoid steel, wood rim, flush sides, full vestibule, full doors, ample room in tonneau of touring car for three people of generous size, luxurious wide seats, with resilient, deep-buffed leather cushion.

GASOLINE TANK. 15 gallon capacity. Oil reservoir 1½ gallon capacity.

CONTROL. Center control; Cane lever gear-shift, with short travel in center, with Emergency Brake lever adjacent, Right-hand steer, Clutch Pedal left, Service Brake Pedal right, Foot accelerator between them, Throttle lever above steering column.

COLOR. Blue-black. Nickel Trimmings.

COOLING SYSTEM. Thermo-Syphon system, large Mercedes radiator, V type, with excess circulation, in conjunction with belt driven fan.

LUBRICATION. Constant level and force feed by pump located on the motor, furnishing continuous spray to all moving parts of the motor. Sight feed on the dash for each of the three main bearings.

CARBURETOR. Holley Model H, with hot air intake and special Holley Carburetor Air Adjustment on the dash to facilitate starting

BRAKES. Two external contracting, two internal expanding, acting on 12-inch drums on rear wheels. Service Brake operated by foot pedal, quick acting Emergency Brake Lever at side of gear shift lever.

RUNNING GEAR AND WHEELS. Wheel base, 106 inches. Wheels, Artillery type, 32 inches, with heavy second growth spokes. Quick Detachable Rims. Tires 32 x 3½ inches, front and rear.

SPRINGS. Front, semi-elliptic; Rear, three-quarter elliptic.

FRAME. Pressed Steel, channel section, dropped, giving low center of gravity and easy riding qualities.

EQUIPMENT. The "WAHL" cars are sold completely equipped, including the following equipment: Mohair Top, Top Envelope and Special Enclosing Curtains, Windshield, Speedometer, Dash Carburetor Adjustment, Prest-O-Lite Tank, Black Enamel and Nickel Gas Headlights, Oil Side and Tail Lamps, Quick Detachable Rims, Tire Irons, Horn, Tire Repair Outfit, Tool Kit, Pump and Jack.

Don't wait until this big chance gets away. Write
or wire today---right now. Every minute counts.

WAHL MOTOR COMPANY

3089 East Grand Boulevard, Detroit, Mich.

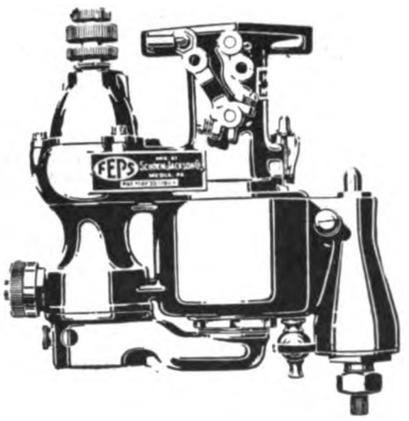
THE Wahl CAR

Stands Squarely on Merit

5 PASSENGER TOURING CAR $790

2 PASSENGER ROADSTER $750

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FEPS

"A Giant in Power—a Miser in Fuel"

YOU have no doubt noticed how trifling necessities like the continuous shifting of gears, back firing of the carburetor, frequent replenishing of gasoline, etc., detract from the pleasure of motoring—but have you ever experienced the real comfort resultant from the elimination of these petty annoyances? It is safe to say that you have not, unless you have ridden in a "Feps equipped" car.

The motorist whose car is equipped with the Feps Carburetor really enjoys its use. The unusual power enables him to take any reasonable hill without shifting of gears. The wonderful flexibility and smoothness of the motor insure thorough riding comfort while the mileage increase of from 25 to 50 per cent. eliminates the necessity of frequent stops for fuel. These are but a few of the many features that have made the Feps Carburetor so universally popular in a few months.

If you would really enjoy your car, have it "Feps equipped."

FEPS Distributors and Service Stations

New York, Factory Branch, 1777 Broadway
Philadelphia: Fischer Auto Supply Co., 1415 Filbert St.
Boston: Motor Supply Shop, 883 Boylston St.
Pittsburgh: Automobile Supplies Co., 200 Wood St.
Cleveland: E. A. Hammer Co., 1839 Euclid Ave.
Baltimore: Carl Spoerer's Sons, 901 S. Carey St.
Rochester: Auto Repair Co., 55 East Ave.
Wilmington, Del.: Ayers' Garage, 11th and West Sts.
Wichita: Hockaday Auto Supply Co., Wichita, Kansas.
Washington: Miller & Dudley Co.

WRITE DEPT. "F" FOR ATTRACTIVE DEALERS' PROPOSITION.

Schoen-Jackson Company

Media, Pa.

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Big Doings for Haynes Dealers

Three new models; greatly increased output; beautified body lines; complete electric control—electric starting, electric lighting, *electric gear shift;* many other new selling points in the car; new selling punch back of the car; new blood in the manufacturing, sales and advertising departments; big advertising campaign to help Haynes dealers

New Opportunity to a Few More Dealers to Handle the Haynes

"There's something doing in Kokomo"—you have doubtless heard this remark passed dozens of times among automobile men, who have been watching the recent developments at the Haynes Automobile Company.

With the same spirit of progress which created the First American Car and has always kept the Haynes in the foremost rank, the Haynes Company has added some top-notch men to an already efficient organization.

The new members of the executive staff were *picked* from the entire field. No one in the automobile business knows better how to build a car as it ought to be built, than Mr. A. G. Seiberling. He has an enviable record of over 25 years in important executive and purchasing positions—over a third of which have been spent in the automobile field. Mr. Seiberling has been acting as factory manager for the Haynes for a number of months back, and now takes up the work as general manager, pledged not only to keep the Haynes *always ahead* in the race, but to make an even greater increase in the output of Haynes cars for 1915. Mr. Seiberling's interest in the Haynes is more than impersonal, for he is a heavy stock holder.

In Mr. Geo. H. Strout, Haynes has a General Sales Manager who needs no introduction to the trade. There is probably no better known or more successful manager of automobile sales. Hundreds of dealers know him personally as a pace-making salesman, service-man, field-man, etc., With such a wonderful car as the Haynes to push, the work of Mr. Strout will be watched with much interest by his many friends. Dealers who wish to secure a part of the 1914 output of the Haynes, should lose no time in communicating with Mr. Strout.

The new Advertising Manager of the Haynes, Mr. Robert Crawford, comes from the Chicago Portland Cement Company. Flattering offers were made to hold Mr. Crawford, but he had definitely decided to enter the automobile business over a year ago. He accepted his present position in preference to other automobile connections, because he *believes* in the Haynes car, and feels he can do his very best work for it—and Mr. Crawford's work has already made Haynes competition take notice. "Watch his smoke."

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Elwood Haynes, President

Elwood Haynes started his career of invention at fifteen. After completing courses at Worcester Polytechnic Institute and Johns Hopkins University, he was constantly engaged in scientific work up to 1891, when he conceived the idea of the "horseless carriage." Preparing drawings, he employed two Kokomo machinists to assist in working out his plans. He made his first trip July 4, 1894. The original Haynes car is now an exhibit at Smithsonian Institute, Washington, D. C., and the placard authentically gives full credit to Elwood Haynes as its creator and builder.

The New Haynes Models

by Elwood Haynes

Creator of the First American Gasoline Car

THE new Haynes models demonstrate that our organization will always be ahead of the times—never a back number. We have always paid more attention to making a good car than to achieving a big output. This very fact has created a self-advertised demand which has required a constantly increasing production. The 1914 output will show a good healthy increase over 1913—and a still bigger production is already planned for 1915.

The new cars—both sixes and fours—are so good that I am satisfied with them. I have never been more enthusiastic over new Haynes models than I am over these.

The new cars have the most graceful lines possible, giving the long, sweeping appearance which suggests class and distinction. The lines of the back of the tonneau are especially handsome. The body lines of the sixes and fours are the same. One car is simply larger than the other.

Wonderful new conveniences have been added to the latest Haynes, which, backed by the prestige and reputation it already enjoys, makes it without a doubt the strongest selling proposition in the whole automobile field.

All New Haynes Models Will Be Standard Equipped With the Vulcan Electric Gear Shift

This is the most remarkable advance in automobile equipment that has ever been made. With the electric self-starter and lighting system it completes the electric control of the Haynes—makes it the most up-to-date car in the whole field.

Every modern development, every convenience that makes a car easy to run, pleasant to ride in and economical to finance, you find in the 1914 Haynes.

And back of all the convenience and up-to-dateness, the same sturdy, dependable quality that is keeping those good, old-time Haynes cars still on the road after years of service, will be always found in every car bearing the Haynes name.

We know absolutely the materials that go into every part of the Haynes. The entire car is made at our factory or under our supervision. We know the materials are right and the testing is thorough and dependable.

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A. G. Seiberling, General Manager

Mr. Seiberling's business experience of over a quarter of a century ideally equips him for his duties as general manager of the Haynes. He knows how to purchase—he knows how to direct. He has held the important position of purchasing agent for such concerns as the Pittsburgh Plate Glass Co., Great Western Plate Glass Co. He organized the Peoria Rubber & Manufacturing Co. in 1896, and engineered a fortunate consolidation with another concern. He comes to the Haynes after ten successful years in the automobile field in important executive capacities.

Epoch-Making Wonder in Auto History—Electric Gear-Shift and Starter

Combined in Standard Equipment on All New Haynes

Driving the latest Haynes car is a simple performance. After setting the spark and throttle levers in proper position, move the ignition switch to the button on the battery side. Push starter button marked "S" and hold down until motor starts. Removing pressure from starter button automatically breaks connection. Next throw ignition switch onto magneto button.

To start, press the low speed button No. 1, until it locks, pushing foot clutch forward to its furthest position. This produces an electrical contact that causes desired shift of gear instantly.

Second, High Gear, Reverse

To go into second gear, press button No. 2, repeating clutch movement. To go into third gear do likewise. To make car go backward when moving forward, bring to stop, then push button marked "R" and operate the clutch.

Driver Can Anticipate Gear Changes

With the electric gear shift, the driver can anticipate or select any gear change desired. For example, if car is going up a steep grade that may necessitate dropping into second gear before top is reached, button No. 2 can be pressed at any time and when car has slackened speed and motor is about to labor, the clutch lever can be pressed, completing connection and instantly throwing gear into second speed.

Arrangement of Gear Shift

The dial or round switch board containing the buttons which operate the gear shift is located at top of steering post. There are seven buttons marked as follows: "N" for neutral, "1," "2" and "3" for low, intermediate and high gears, "R" for reverse. "S" is the starting button, the central, unmarked button operates electric horn.

Changing From One Gear to Another

Pressing button "N" entirely clears the switch-board, but not until driver has thrown out clutch to the limit. By pushing the clutch lever forward to a limited degree, the clutch can be slipped in the usual manner without in any way affecting the gear shift. When clutch has been pushed about half way out, any gear that is being used is brought into neutral position and by pushing the the clutch pedal to the extreme limit, the gear is shifted into any other gear ratio that has been selected.

Perfectly Simple and a Proven Success

The Vulcan Electric Gear Shifting outfit is decidedly simple, both electrically and mechanically. Has been used on a Haynes Six for a long time. Never necessary to shift gears by hand.

Emergency Hand Gear Lever

Is provided the same as a crank is provided for emergency use, with any self starter. Quickly attached, but unlikely to be needed.

The Mechanical Principle of the Vulcan Gear Shift

Is so simple as to be readily understood at once when it is seen at work. We'll be glad to send full particulars to any one desiring them.

Briefly, Solenoid coils or electromagnets are used to make the shift. These are energized by the battery which furnishes current for the electric starter and lights. The amount of current used is so small that it scarcely can be measured. The current is thrown from battery only for fractions of seconds, while gears are being shifted.

Advantages of Electric Gear Shift

Unnecessary to remove hands from wheel.

Driver can always anticipate speed changes before throwing out clutch pedal.

Clutch always disengaged, and gears drawn to neutral mechanically before a shift, rendering it impossible to strip a gear.

Gear changes made with great rapidity.

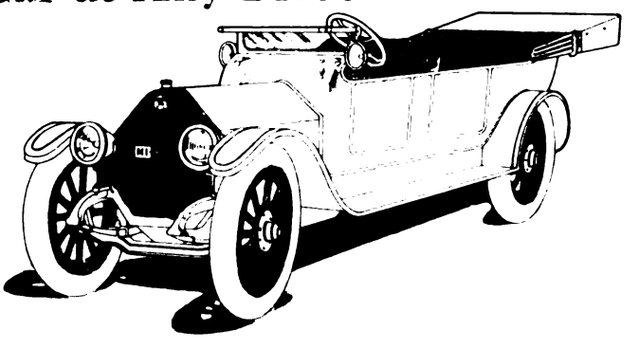
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Frank N. Nutt, Chief Engineer

For ten of his fourteen years with Haynes, Mr. Nutt has been Engineer—first, Assistant then Chief. A born mechanic, at the early age of eight, he was spending his spare hours at his home-made draughting board or in the neighboring machine shop. Naturally he learned the machine trade at the first opportunity—and learned it well—of a painstaking French machinist. Mr. Nutt manufactured bicycles a few years, and has been with Haynes ever since. Mr. Nutt is well known as a driver in automobile contests and has long been identified with the S. A. E.

The Greatest Line-up of Specifications From a Selling Standpoint Ever Offered in Any Car at Any Price



The Haynes Six Cylinder 7 Passenger Touring Car, Model 27

Motor—4¼-inch bore, 5½-inch stroke, L-head Haynes design, cylinders cast in pairs. Enclosed valves.

Cooling—Centrifugal pump and pressed steel fan.

Wheelbase—Model 26, 130 ins.; Model 27, 136 ins.; Model 28, 118 ins.

Ignition—American Simms magneto with patent pole shoe producing hot spark at full retard. Perfect synchronism, greater horsepower and more perfect running motor.

Lubrication—Splash and gravity feed to main bearings and idle gear, also constant feed to oil basins in lower base.

Control—Left hand drive. Vulcan electric gear shift, dispensing with hand lever and enabling driver to shift gears electrically with an instantaneous shift.

Transmission—Selective type, three speeds forward, one reverse. Timken roller bearings.

Steering Column—Worm and worm gear type.

Clutch—Haynes contracting steel band on steel drum. Supported by crank shaft. Easily adjustable with single set screw. Applies the power gradually.

Rear Axle—Timken full floating on Models 26 and 27. McCue axles on Model 28 with Gourney bearings.

Front Axle—I-beam, single piece, O. H. steel heat treated. 1½-inch spindles of chrome nickle.

Wheels—Artillery type with Funk demountable rims.

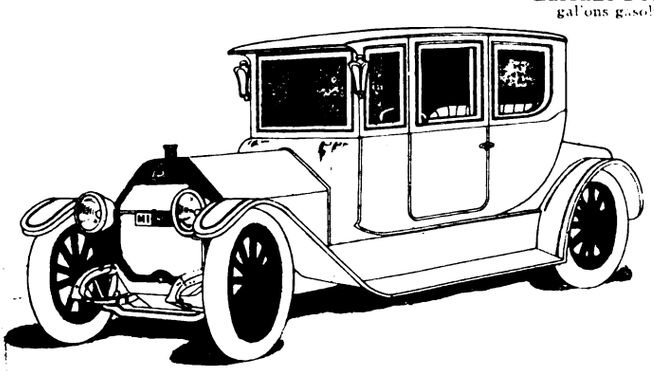
Tires—Model 26, 36x4½ ins.; Model 27, 36x4½ ins.; Model 28, 34x4 ins.

Springs—Front, semi-elliptic. 39⅛ inches long, 2 inches wide; rear 48 inches long, 2 inches wide.

Brakes—Contracting internal, expanding internal. Diameter 15 1-2 external and 15 internal on Models 26 and 27, 12 and 16 on Model 28, both internal.

Finish—Body; Indiana dark blue, black gear and wheels—Pacific Tour gray body, black gear and wheels, optional. All metal equipment, gun metal, black enamel and nickel.

Gasoline Feed Pressure feed. Storage tank holds 20 gallons gasoline. At rear of car where easily filled.



The Haynes Coupe, Model 28

Upholstery—Models 26 and 27, hand buffed leather. Model 28, machine buffed. Cushions deep.

Starting and Lighting—Leece-Neville electrical system. A separate unit system embracing a generator for charging battery and motor for cranking engine. Has proved 100 per cent efficient under all conditions. Exceedingly simple.

Cowl Board Equipment—Electric lights, sight oil feed, automatic cut-out for electric light, auxiliary air pressure pump with gauge, speedometer. Models 26 and 27 have rim wind clock.

Other Standard Equipment—Top, top cover of silk mohair, mechanical tire pump, rain vision ventilating wind shield, Vulcan electric gear shift, two large electric head lights, electric side lights, electric tail light, full cowl board equipment, electric starter, generator, 80 ampere hour storage battery, coat and foot rails, speedometer, electric horn, tire irons, full tool equipment, and one extra demountable rim.

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"Wilhelm the First," Factory Manager

Germany has her Kaiser Wilhelm but America has her A. N. Wilhelm, presiding genius at the Haynes factory. You'll find Mr. Wilhelm in overalls. He is literally "on the job," constantly going through the factory, taking in everything with a pair of penetrating steel gray eyes, stopping a man here and there with a pertinent query, always the master of the situation. Mr. Wilhelm is another born mechanic. "Kaiser" Wilhelm as factory superintendent of the Haynes has things moving with a smoothness and a precision that mean mechanical nicety and dependability in the finished cars.

Big Advertising Campaign

THE advantages of owning a Haynes Car will be advertised from now on in magazines, newspapers and farm papers, more aggressively and extensively than ever before.



The opening gun of our advertising campaign will be a two-page spread to appear in the Aug. 2nd issue of the Saturday Evening Post, to be closely followed by advertisements of similar size in Collier's Weekly, Harper's Weekly and big announcements in other magazines, newspapers and farm papers. Later on we will give you a glimpse of some of the great ads we are preparing.

Tens of thousands of dollars will be spent in the newspapers in the cities and towns *where our dealers do business*. We have a most liberal plan for co-operative local advertising campaigns, whereby we share the expense while the direct benefits go straight to the dealer.

Our advertising and sales departments will not only give efficient assistance in locating prospective purchasers, but will furnish dealers with selling suggestions which have been found by wide experience to be the most effective.

Great Book for Prospective Buyers

Written by Elwood Haynes

That Will Put Haynes Dealers in Touch With Thousands Who Are Going to Buy

No book has ever been written about the automobile that will be so valuable and so much wanted as this, written by the man who created the American Motor Car. This book will be offered to motorists in the magazines, farm paper and newspaper advertising. It will locate prospects for our dealer.

The Advertising Department will issue each month a magazine, "The Haynes Pioneer," full of selling punch and topics of live interest to Haynes dealers and owners.

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Geo. H. Strout, General Sales Manager

As a lad in school and a college student, Mr. Strout was always a leader. Upon entering business his quality of leadership was so quickly apparent that within two years he was made Branch Manager for the Monarch Bicycle at New York. It was a logical step from the wheel to the automobile and in 1903 he formed the Western Automobile Company, St. Paul, and sold it in 1905 at a highly remunerative figure. Since then, in executive selling capacities with automobile concerns, he has become known to every automobile dealer, big and small, from coast to coast.

The Haynes Car is the Strongest Selling Proposition in the Field

There is no car on the market that is so brim full of strong talking points as the Haynes. In previous years, with its fame of being America's First Car, its 20 year record of reliable service, its strength, simplicity, symmetry, surety and satisfaction, it made the strongest kind of a selling proposition. The new models with everything new in equipment including the wonderful Electric Gear Shift, will coin money for Haynes dealers.

It Has a Strong Appeal to Every Member of the Family

Women Fall in Love With the Haynes at First Sight

The long, sweeping, beautiful lines of the new Haynes model compel admiration. The wide doors, the foot deep cushions, the liberal foot room of the tonneau, the roominess of the seats and the smooth-riding qualities of the car, captivate the ladies.

The new limousine and coupe bodies, with the graceful slope of roof and dome, and their exquisite finish, will have no superior.

Women who want to share the exhilaration of driving find the Haynes the car of their dreams. The complete control is centered on top of steering column in a fixed position and entirely operated by electricity. Think of it! Press a button and the starting motor begins to purr—press No. 1 button of the gear shift, and you're off on first speed, with every variation of speed under the absolute control of the finger tips.

Every convenience is found on the dash. There is the rim wind clock, switch for the electric lights, oil sight feed, ignition, automatic cut out for the lights, dash light, speedometer and auxiliary air pressure pump with air gauge.

The regular equipment includes mechanically operated tire pump—really a greater improvement than the self-starter.

The Haynes gasoline supply is pressure-feed. This means that the Haynes climbs grades of any pitch without trouble. Grades that are impossible to gravity feed type cars are easy for the Haynes. The storage tank holds twenty-one gallons of gasoline—three more than the usual size—and is at the rear of the car where it is easily refilled without disturbing occupants. This arrangement also leaves full carrying space under front seat.

Power, Dependability and Economy, Plus the Qualities Before Mentioned Win Men to the Haynes

No man, whether he knows much or little about automobile engines, can fail to be impressed with the power plant of the Haynes. It is L-Head type—the type which most foreign cars now use, and extensively used by many of America's leading manufacturers.

The dependability of the Haynes car is proverbial. The most careful buyer feels safe in buying it. The Haynes is a whole car—a complete car—nothing in it for the sake of novelty—but everything for efficiency and economy.

The amount of gasoline required to run a Haynes, and cost of upkeep are convincing arguments in its favor. We furnish our dealers abundant proofs of this kind.

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Robert Crawford, Advertising Manager

Mr. Crawford is best known for his work in the cement industry. First with the Universal Portland Cement Company, then as Advertising manager of the Chicago Portland Cement Company, he won the reputation of getting more publicity for cement in general and for his own company in particular, than anyone else in a similar capacity. Mr. Crawford has achieved a considerable reputation for his exhibits at the Cement Shows and can be depended upon to even better this successful record of the past in his work for Haynes.

The Haynes Has Always Been a Good Money-maker—It Will Be a Money-coiner This Year

The Haynes has been piling up prestige for 20 years. It is always spoken of as a good car. It is a car that people are proud to own and proud to talk about—a car that attracts buyers and is easily sold. Every Haynes owner is enthusiastic over his car and boosting it continually to his friends. Most Haynes owners are friends of previous Haynes owners.

The Haynes for 1914 will be all this and more—in addition it will be the first car to have the wonderful electric gear shift—the first car entirely controlled by electrically operated devices.

Stays Sold—Real Profits

The Haynes is an easy car to sell—economical of salesmen's time. Once sold it stays sold. It is so simply and dependably made that trouble of any kind is almost unknown. The Haynes dealer is not continually pestered by the complaints of disgruntled owners, not driven to distraction by tales of twisted frames, broken springs, self-starters that won't start, engines that balk, and the hundred and one other things that take time and cut down profits.

Our Branches send out letters periodically to their list of Haynes owners in the cities and neighborhoods where they do business, to inquire if everything is all right and offer their service, if any is needed. 176 answered the last letter sent out by our Chicago Branch, and only two needed any service in connection with their car.

No Unkept Promises—Square Deal For All

Haynes dealers are not going to lose money through inability to get promised cars. We are careful not to promise beyond our output, or to take more dealers than we can provide cars for. We know it pays to play fair with our dealers.

Connect Up With Haynes—and You Do Business With a Concern That Is Firmly Established

A connection with Haynes means a permanent possession. The Haynes Automobile Company is a permanent institution. Solidly grounded. Conducted along safe lines. Believes in making a profit each year, not trusting to the future to come out from under tremendous overhead expenses and attain a hazardous success. Hundreds of automobile manufacturers have come and gone during the 20 years that the Haynes has been enjoying its steady, healthy growth. We contend that our policy of natural, steady growth is the safe, profitable way.

Connect up with Haynes, and you will not face the possibility of having to take up the sale of another make of car inside of a year or two, with all that means in the way of lost prestige and effort. Connect up with Haynes and you will be dealing with a concern that has proved itself substantial, and a money-maker—and whose dealers are making money, too.

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Many Dealers Prize the Haynes Account as Their Most Valued Asset

The Increased Haynes Output Puts This Prize Within Your Reach—If You Act at Once

If you would like to line up with a car of established reputation, a car that is always spoken of highly, a car whose name as the first car carries with it no little degree of distinction, a car whose owners are boosters and always plugging the game of the Haynes dealer—if you would like to connect up with a manufacturer who believes in playing the game safe, whose credit is good, whose reputation for fair play is well known, whose prospects for the future show every indication of the same steady progress as in the past, who has been in business ever since the automobile business started in America—and will be in business, no doubt, as long as it lasts—if you want to handle a real car, with a real reputation and real selling merit, a car that fairly bristles with strong selling points, that again comes to the front as a pioneer in the use of *the electric gear shift*—here is your chance to get some of the increased output of the Haynes. The opportunity is so good that you had better wire your reservation. At least fill out the coupon, slip it in an envelope and send it under special delivery postage.

The Haynes Automobile Co.

1 River Street **Kokomo, Indiana**

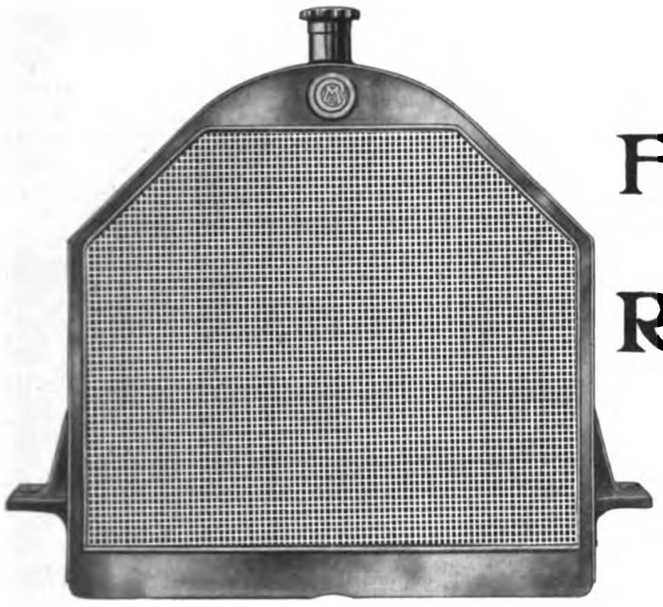
The Haynes Automobile Co.
1 River Street, Kokomo, Ind.

Gentlemen—I think I may be wanting some of those new Haynes cars. Send me your full proposition.

Name _____

Address in full _____

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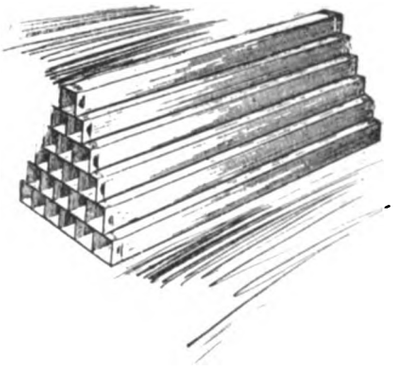


FEDDERS SQUARE TUBE RADIATORS

OUR high reputation as automobile radiator manufacturers was built up primarily on the famous Fedders square tube design. Fedders Square Tube Radiators are standard on many of the highest grade American cars. They have never been equaled for cooling efficiency, freedom from trouble and ease of repair in case of accident.

However, our immense manufacturing facilities enable us to take on contracts for radiators of any design whatsoever. We can handle large or small orders with unusual promptness.

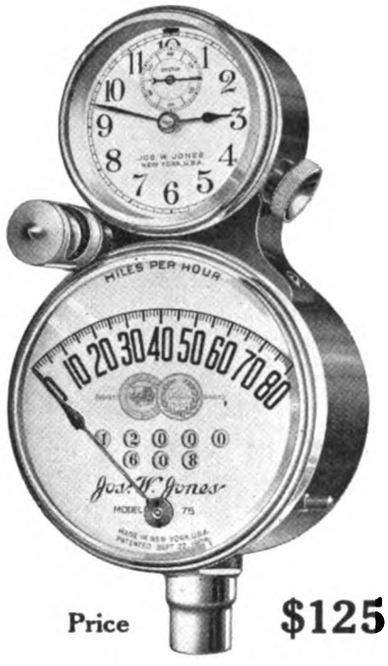
Send us your blue prints and we will tell you just what we can do.



Fedders Manufacturing Works
Buffalo, New York

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The New York Service Station



Price $125

MODEL 175—Same as model 75, with 3-in. Chelsea 8-day stem-wind and stem-set clock, and electric light.



Price $75

MODEL 75—4¼-inch dial, 80-mile speed scale, with large, equally spaced figures. Low initial speed indication. Large Odometer figures, registering to 100,000 miles and repeat for the season, and 100 miles and repeat for the trip. Tenths of miles shown by red right-hand figures. Instantaneous trip reset. Standard finish—black enamel, nickel rim, Brass Ring Optional. Leather covered casing.



The Guarantee

Behind Every Jones Speedometer

The guarantee behind every Jones instrument is simply, SATISFACTION. That covers every part of the instrument.

Every man who places a Jones on his car is thus assured good service. And back of this guarantee stands Jones Branch Houses and agencies in all of the principal cities of the world.

Able Men in Charge

These branches and agencies are managed by men who have had a wide experience. They are chosen for their ability to handle every transaction to the absolute satisfaction of all who deal with them.

They are experts—men of education. They are gentlemen. And they have the finest speedometer built—to make this cycle of service complete.

Simplicity Is Vital

The New Jones is the simplest speed indicator. It has the fewest parts. It is built of the very best material offered for each purpose. We grind every part where exactness is needed to the one ten-thousandth part of an inch.

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MODEL 60—4-inch dial, 70-mile speed scale, with large, equally spaced figures. Low initial speed indication. Large Odometer figures, registering to 100,000 miles and repeat for the season, and 100 miles and repeat for the trip. Tenths of miles shown by red right-hand figures. Instantaneous trip reset. Standard finish—black enamel with nickel trim, brass optional. Leather covered casing.

With this simplicity and construction the Jones is the strongest speedometer. The accuracy we obtain in each instrument is thus permanently intrenched.

13-year-old Jones are as accurate now as the day they were placed on their first motor cars. Many today are on their fifth and sixth cars, giving perfect service.

The New Jones will outlast many times over any old Jones ever built.

Motorists Want "Year 'Round" Speedometers

Men are now driving their cars the year 'round instead of merely in Spring and Summer. They want a speedometer that shows the true speed in every temperature. Jones advertising, reaching millions each month, is convincing them that the Jones does show it.

We are explaining in every Jones ad all the advantages—the Steady Hand, that moves or rests without the least vibration—the Immovable Dial and Large Speed Figures, the easiest dial to read—the Correct indication from one mile per hour up to the highest speed each instrument shows—and the ABSOLUTE ACCURACY AT ALL SPEEDS, AT ALL TIMES, REGARDLESS OF TEMPERATURE.

Let Us Send This Man

There's a man in our factory who has every Jones detail at his finger tips. He can answer your every question and give you every fact. He can take a Jones instrument apart and point out exactly and clearly every Jones advantage. He has the Jones Proposition to car manufacturers and the authority to make it conform to your needs.

In sending the coupon for the Jones books and naming a date convenient to you on which you can talk with this representative you are obligating yourself none whatever. Please send it now.



MODEL 360—Same as Model 60, with 3-inch Boston 8-day stem-wind and stem-set clock, and electric light.

The New Jones Speedometer

Gyroscope Principle

The Jones Speedometer
Broadway at 76th Street, New York City

Send Jones Books. Can see Jones representative .....

.....

Name .....

Address .....

THE JONES SPEEDOMETER, Broadway at 76th Street, New York

Branches:

New York, Broadway at 76th St.
Boston, 109 Massachusetts Ave.
Philadelphia, 1427 Vine St.
Chicago, 1430 Michigan Ave.
Baltimore, 217 W. Saratoga St.
Detroit, 872 Woodward Ave.
Buffalo, 20 Goodrich St.
Pittsburgh, 5904 Penn Ave.
Cleveland, 1845 Euclid Ave.
Charlotte, 209 Church St.
Memphis, Madison Ave. and 4th St.
Minneapolis, 800 Hennepin Ave.
Omaha, 1608 Harney St.
San Francisco, 1436 Van Ness Ave.
Los Angeles, 408 W. Pico St.
Portland, Ore., 71 Seventh St.
Seattle, 1710 Broadway.
Indianapolis, 1201 State Life Bldg.
Atlanta, 35 N. Pryor St.
New Orleans, Barrone and Perdido Sts.
Birmingham, 18 S. 20th St.
Denver, 1600 Broadway.

Foreign Agencies:

J. Millen & Son, Ltd., Montreal, Toronto, Winnipeg, Vancouver
Markt & Co. (London), Ltd., London
Markt & Co., Hamburg, Milan, Vienna, Barcelona
A. A. Kampfraath (Brussels), Ltd., Brussels, Amsterdam
Severin & Co., St. Petersburg
G. Bruggemann, Moscow
Y. D. Rose, Paris
William D. Easy & Co., Sydney, Australia
The Tarrant Motor Co., Melbourne, Australia
C. E. Helvie, Manila, P. I.
Adams, Ltd., Christchurch, New Zealand
Markt & Schaefer Co., Rio de Janeiro, Brazil; Buenos Aires, Argentine; Mexico City, Mex.; Habana, Cuba; San Juan, P. R.

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Hartford CONE CLUTCHES

CLUTCH efficiency receives its real test in motor truck practice. The point of application of a truck's motive power to the resistance of its load comes in the clutch. With a heavy load the application of power must be uniform and gradual to overcome the inertia of the load, and then the application of power must be positive so as not to waste any of the motive power.

There is also the personal equation to be figured in—the thought and skill of the ordinary truck driver in manipulating the clutch—in governing the application of power to the load.

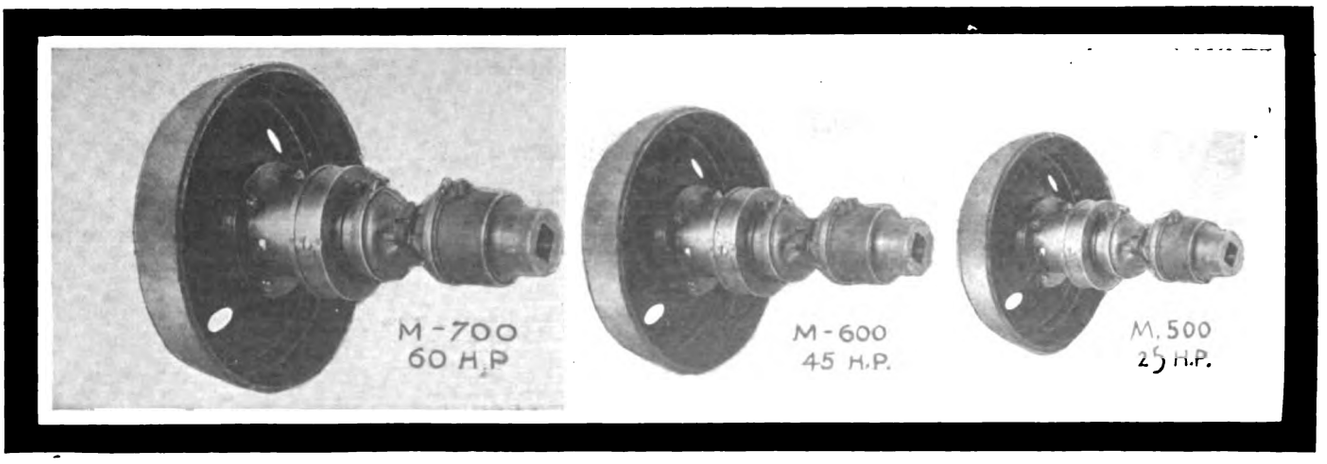
In making their recommendations to the U. S. War Dept. as to types of parts calculated to give best service, the Society of Automobile Engineers favored the cone clutch.

Hartford Cone Clutches are invariably preferred by truck designers.

They are made of the highest grade materials. Special machinery designed for clutch work insures their accuracy and the closest kind of inspection prevents any but perfect clutches leaving our shops.

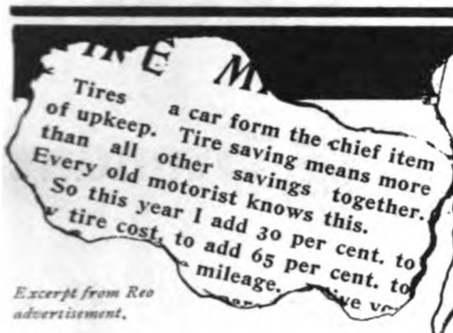
Hartford Cone Clutch design provides for accessibility and interchange of parts. Any interchange of parts is so simple that the ordinary driver can take care of it. Any part may be removed for inspection or replacement without disturbing the balance of the assembly. Send blue prints of your motor and chassis with general specifications and let us figure with you on your clutch requirements.

Hartford Auto Parts Company
HARTFORD, CONN.



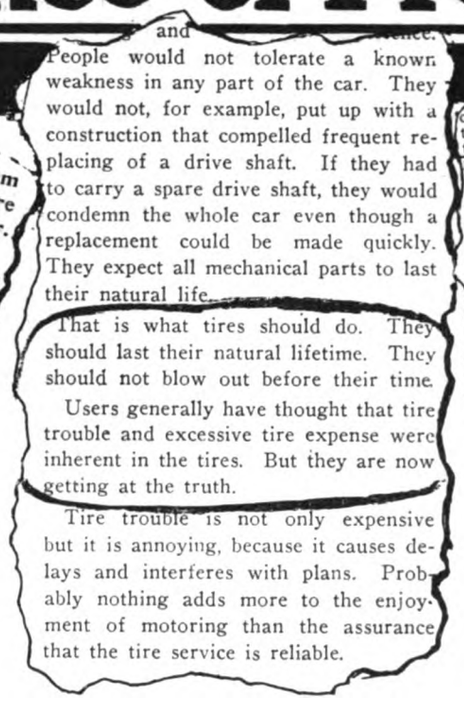
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An Ounce of Prevention


Tires a car form the chief item of upkeep. Tire saving means more than all other savings together. Every old motorist knows this. So this year I add 30 per cent. to tire cost, to add 65 per cent. to mileage.

Excerpt from Reo advertisement.

Car manufacturers should feel keenly their obligation to assist in keeping tire costs down. Excessive tire bills have kept many from owning cars.

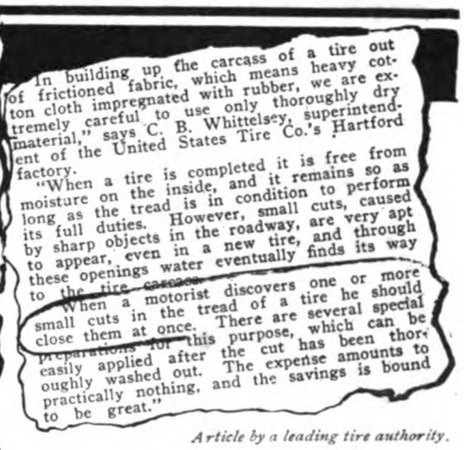

People would not tolerate a known weakness in any part of the car. They would not, for example, put up with a construction that compelled frequent replacing of a drive shaft. If they had to carry a spare drive shaft, they would condemn the whole car even though a replacement could be made quickly. They expect all mechanical parts to last their natural life.

That is what tires should do. They should last their natural lifetime. They should not blow out before their time.

Users generally have thought that tire trouble and excessive tire expense were inherent in the tires. But they are now getting at the truth.

Tire trouble is not only expensive but it is annoying, because it causes delays and interferes with plans. Probably nothing adds more to the enjoyment of motoring than the assurance that the tire service is reliable.

Published interview by H. H. Franklin.


In building up the carcass of a tire out of frictioned fabric, which means heavy cotton cloth impregnated with rubber, we are extremely careful to use only thoroughly dry material," says C. B. Whittelsey, superintendent of the United States Tire Co.'s Hartford factory.

"When a tire is completed it is free from moisture on the inside, and it remains so as long as the tread is in condition to perform its full duties. However, small cuts, caused by sharp objects in the roadway, are very apt to appear, even in a new tire, and through these openings water eventually finds its way to the tire carcass.

"When a motorist discovers one or more small cuts in the tread of a tire he should close them at once. There are several special preparations for this purpose, which can be easily applied after the cut has been thoroughly washed out. The expense amounts to practically nothing, and the savings is bound to be great."

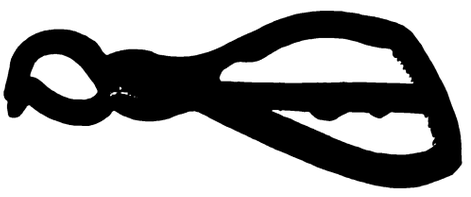
Article by a leading tire authority.

A leading tire expert points out causes of tire trouble, and the cure therefor.

When a tire begins to show wear, when small and apparently insignificant cuts appear it is the time to make the first move toward saving tire costs.

Then is when every motorist should have a pair of Gilmer Tire Repair Pliers. This instrument holds a tire cut open so it can be cleaned and gum put into it. When the Gilmer Pliers are released the wound closes over the gum and heals in a few moments.

Gilmer Pliers are the handiest instruments on the market and should be a part of every car's tool equipment.



Their convenience does away with every incentive to put off the all important attention to small tire repairs.

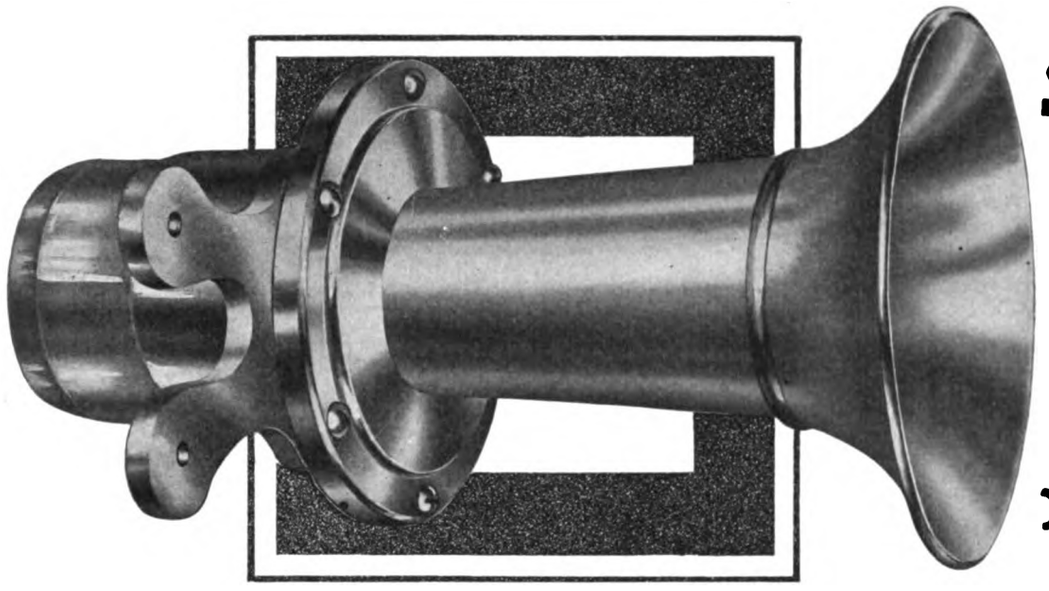
Write or wire us for quotations on equipment or small lots

G. WALKER GILMER, Jr.

52 No. Seventh Street **Philadelphia, Pa.**

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Square Motor Horn



Standard
$15

LENGTH, 10¾ INCHES
FLARE, 5¼ INCHES
6 VOLT MOTOR
FINISH: BLACK ENAMEL, BRASS OR NICKEL

Motor Driven

Louder Warning Sound—Uses Less Current—Costs Least

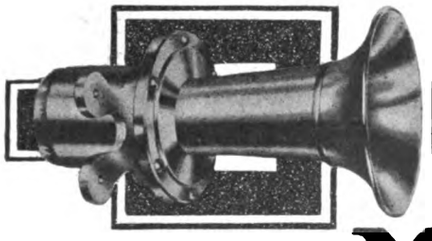
All because the notched armature of the Square Horn motor strikes the center of the sound disc direct. Because the only adjustment in order to increase or diminish the sound is simple and easy to make.

Because of its simple design, few parts and consequent saving of manufacturing costs, we use only best of materials, finish and methods and still make the price lower than any other motor driven horn on the market.

We sell only through dealers. Write today for full particulars and discounts. We protect dealer and user absolutely.

How many Square Horns can you sell? Think it over and send in your order.

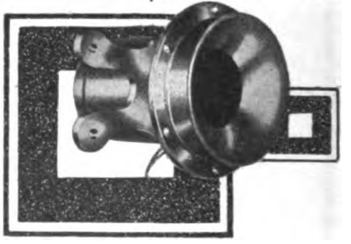
Junior, $10



Length, 10 inches; Flare, 4¼ inches.

The Square Motor Horn Co., Inc.
496-98 East 134th Street, New York City

Juniorette $9



Length, 5 inches; Flare, 3½ inches.

Motor Driven

Square Motor Horns use 6-volt motors, run on Dry Cells or Storage Batteries and are finished in Black Enamel, Nickel or Brass.

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EISEMANN

IF you want concrete evidence of the remarkable dependability of Eisemann Ignition communicate with any one of the 39 leading truck manufacturers in the United States who are using Eisemann Ignition on their product. (We will send you their names if you wish.)

All told, 64 car makers are using Eisemann Ignition almost exclusively, and of these 64, 39, as mentioned above, are truck makers. In other words, under the severest conditions of "make-good-service" Eisemann dominates the field—for you know that in a commercial proposition such as motor trucks—merit, efficiency and dependability alone count.

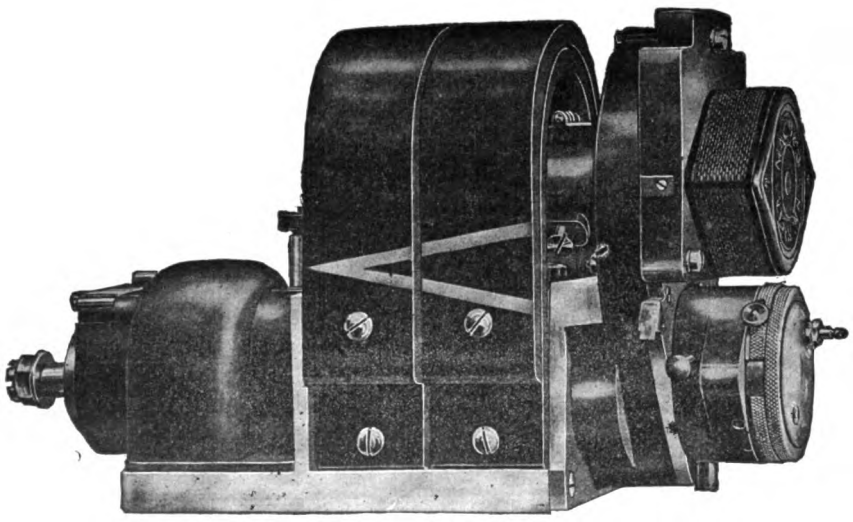
Eisemann Ignition can be adapted to any requirements. Let us demonstrate our superiority by actual test.

The Eisemann Magneto Company

225-227 West 57th Street, NEW YORK

INDIANAPOLIS, IND.
514 North Capitol Avenue

DETROIT, MICH.
802 Woodward Avenue



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WE'RE Getting Letters Like This by the Hundreds

TANNER MOTOR CAR CO.

1474—1476 BEDFORD AVENUE
COR. STERLING PLACE

PHONES 7171 PROSPECT
7172

BROOKLYN—NEW YORK

OUR LINES

Maxwell

CHANDLER

Oldsmobile

HERCULES TRUCKS

Maxwell Motor Company, Inc. June 26, 1913
Detroit, Mich.

Gentlemen:-

You will be glad to learn that I have just sold my last seven-passenger six-cylinder 50 H.P. car, which makes thirty-six cars of this model I have sold this season, and as I have just learned that you will probably be sold out of this model within the next ten days, beg to say:-

Please enter my order for eight additional cars, two to be shipped immediately, four July 1st and two July 10th; if there is any question as to your being unable to make shipment after July 1st, ship me the entire eight immediately, making four shipments—two cars each two days apart—and I will arrange to lift drafts accordingly.

You will be glad to learn that in all my experience selling cars, I have never found one with which I have had so much success or one which affords the customer so much pleasure and general satisfaction. Your six-cylinder motor is undoubtedly the best ever put under a hood and this, together with the full-floating axle, Gray & Davis Starter, Warner Speedometer and all the other improvements incorporated in your present model, has indeed made it a remarkable value and one that has "made a hit" with everyone who has had an opportunity to ride in it, and I want you to know that I am glad to learn that you are going to continue this model next year and you can rest assured that I shall have no trouble in placing at least seventy-five of them in Brooklyn.

Please let me hear from you immediately in regard to the above-mentioned shipments as I do not want to be caught without any cars.

Very truly yours,

TANNER MOTOR CAR COMPANY.

Louis Burstein

MAXWELL MOTOR COMPANY, Inc., Detroit, U. S. A.

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Play safe by arranging for deliveries of the small parts you are going to use ***before you actually need them.***

We are now making several hundred thousand parts daily for the Summer and early Fall requirements of manufacturers of automobiles and automobile accessories; we can give you very good service right now on practically every type of duplicate screw machine parts in brass, steel and iron, up to 2 1-4 inch diameter.

Our screw making equipment has been increased to handle a million parts a day. This increase plus the experience gained from fifteen years of learning how to produce and handle screw machine work rapidly, means early deliveries and parts that are really duplicates of your models and specifications.

Play safe by ordering now and avoid the chance of being held up on your Fall and Winter plans. Prompt estimates and delivery date will be made on samples and specifications mailed direct to our Quotation Department.

The National-Acme Manufacturing Co.

Automatic Screw Machines and Their Products

SIXTH **CLEVELAND** CITY

NEW YORK, 77 White Street
CHICAGO, 23 So. Jefferson Street
BOSTON, 141 Milk Street
DETROIT, Majestic Building
ATLANTA, Third Nat'l Bank Bldg.
MONTREAL, in St. Henri at G. T. R.
Warehouses: New York, Chicago

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INVA

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Clearest



INVADER

Lessees of Chas.

MAIN OFFICE:
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FACTORIES:
New York and Philadelphia

BRANCHES:
BOSTON.....284 Columbus Ave.
WASHINGTON, 1627 New Hampshire Ave., N. W.
PHILADELPHIA, 113 Arch St. and 719 N. Broad St.

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OIL COMPANY

F. Mellom & Co.

TERRITORIAL AGENTS:

Boyer-Campbell Co. ..... Detroit, Mich.
Beck & Corbitt Iron Co. ..... St. Louis, Mo.
Motor Car Supply Co. ..... Chicago, Ill.
Lee Hardware Co. ..... Salina, Kansas
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American Lubricating & Supply Co. . Kansas City, Mo.
James Bailey Company ..... Portland, Me.



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Springfield Metal Bodies

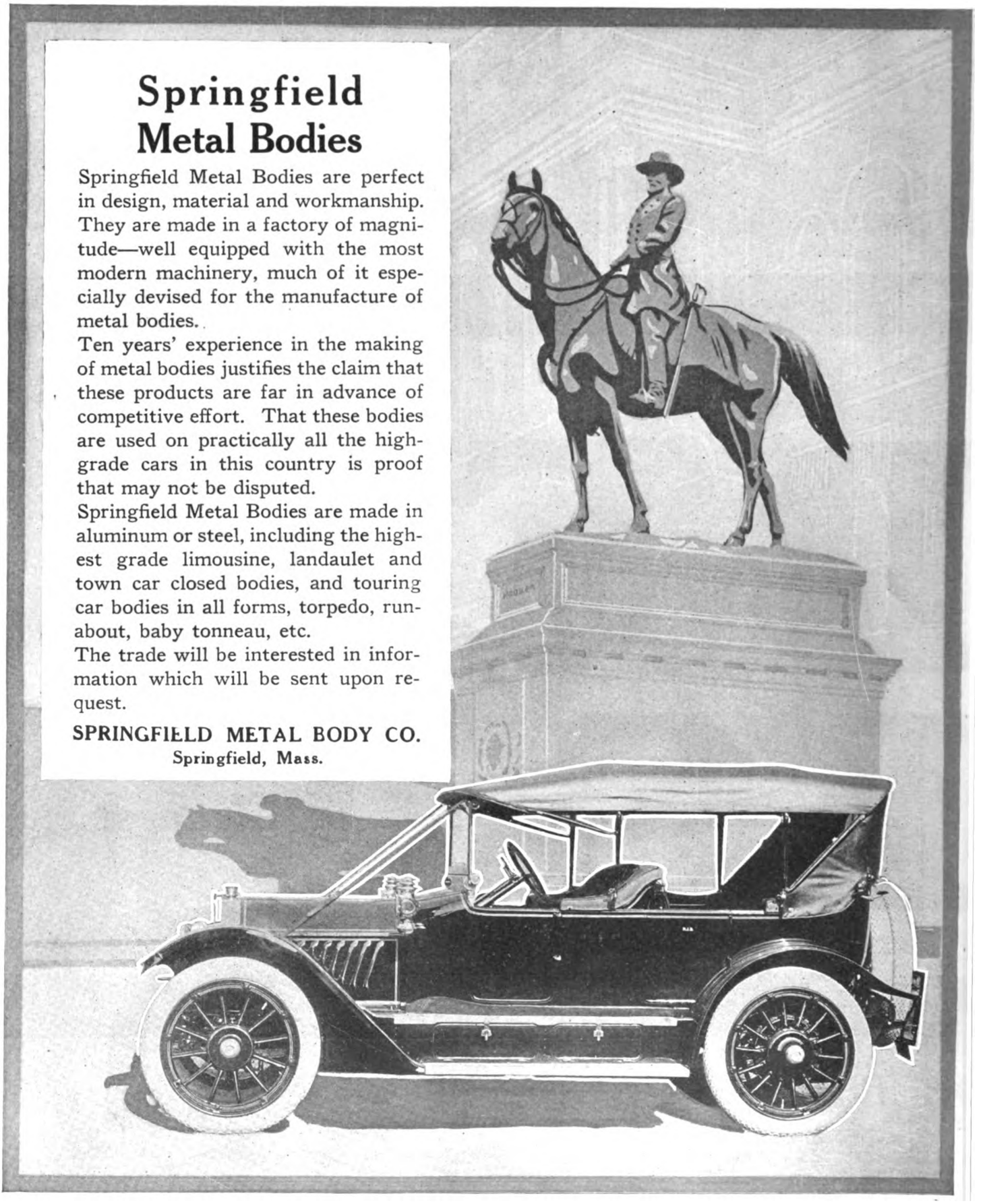
Springfield Metal Bodies are perfect in design, material and workmanship. They are made in a factory of magnitude—well equipped with the most modern machinery, much of it especially devised for the manufacture of metal bodies.

Ten years' experience in the making of metal bodies justifies the claim that these products are far in advance of competitive effort. That these bodies are used on practically all the high-grade cars in this country is proof that may not be disputed.

Springfield Metal Bodies are made in aluminum or steel, including the highest grade limousine, landaulet and town car closed bodies, and touring car bodies in all forms, torpedo, runabout, baby tonneau, etc.

The trade will be interested in information which will be sent upon request.

SPRINGFIELD METAL BODY CO.
Springfield, Mass.



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A Life-Size Portrait ~

IT SPEAKS FOR ITSELF



Gurney Ball Bearing Company
Jamestown, N. Y.

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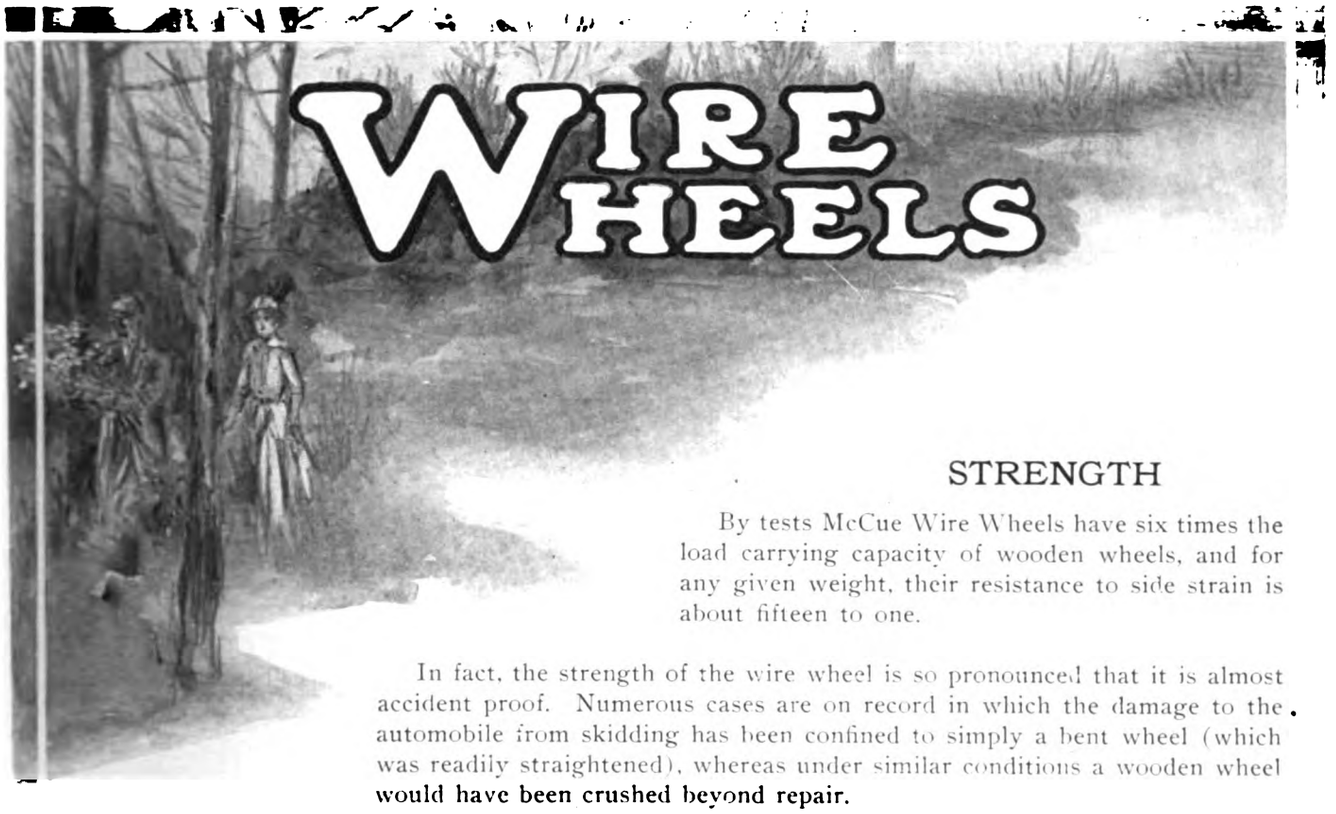
Tire economy, first, last and all the time—that, Mr. Dealer, is the underlying reason why you should shout for wire wheels and keep on shouting until every car you sell is wire wheel equipped. Fundamentally, there are about a dozen reasons why every car that rides should carry McCue Wire Wheels but the chief reason from your standpoint of delivering the goods to your customers is that they practically double the life of your customers' tires. For this reason if for no other, wire wheels are bound to dominate the situation in America just as they have in Europe—and as usual the wide-awake dealer is the one who sees the handwriting on the wall to-day. Don't wait until you are forced to sell wire wheels, head the procession and insist upon them coming on the cars you sell.

TIRE ECONOMY

Exhaustive tests in actual service have proved that from 30 to 50 per cent. more tire economy results from the use of wire wheels. Heat is an enemy of tires. The metal rim of McCue Wire Wheels dissipates all molecular and frictional heat in tires while wooden rims hold the tire heat within the tires and thus bring about devulcanization.

McCue Wire Wheels use Q. D. Rims. Demountable Rims would defeat the tire saving of wire wheels, as they add weight at the rim or periphery of the wheel. Extra rim weight increases the pound on tires as the wheels go round. The light, heat dispersing rims of McCue Wire Wheels are the main reasons for their economy on tires.

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STRENGTH

By tests McCue Wire Wheels have six times the load carrying capacity of wooden wheels, and for any given weight, their resistance to side strain is about fifteen to one.

In fact, the strength of the wire wheel is so pronounced that it is almost accident proof. Numerous cases are on record in which the damage to the automobile from skidding has been confined to simply a bent wheel (which was readily straightened), whereas under similar conditions a wooden wheel would have been crushed beyond repair.

WEIGHT

A McCue Wire Wheel complete with tire weighs about the same as an ordinary demountable rim (without the wheel, spokes, hub, etc.) and its tire.

WEIGHT SUSPENSION

The weight of a McCue Wire Wheel equipped car is suspended from 60 to 70 points about the wheel, whereas a wooden wheel relies upon two or three spokes to support the car weight, as a dead weight. Wire wheels, by suspending, act as extra springs or shock absorbers, whereas wooden spokes are rigid transmitters of all shocks to the mechanism of the car.

ALIGNMENT

McCue Wire Wheels are impervious to heat or cold and are not affected by damp weather. A wire wheel always remains true and retains its perfect alignment.

TIRE CHANGES

In the event of puncture, the changing of a McCue quick detachable wire wheel is very rapid and simple, in fact, very much more so than the changing of the majority of demountable rims.

At the recent Indianapolis race many tire changes were made in from 20 to 25 seconds.

McCue Wire Wheels use Standard Ⓢ Spokes. Both spokes and nipples are made from special drawn carbon steel of extreme tensional and torsional strength, by the Standard Co. of Torrington, Conn. They are of the same pattern and consistency as the spokes made for foreign wheels by the famous Coventry (England) Swaging concern.

The McCue Company, Buffalo, N. Y.

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MORE EFFICIENT SALESMANSHIP

is generally admitted to be

THE GREATEST NEED OF THE TRADE

MOTOR WORLD

is doing its part to render the need less acute by

"Improving the Breed of Salesmen"

One of its most recent efforts in that direction is the

Offer of Four Cash Prizes

$30 — $20 — $15 — $10

for the best four articles conforming to the title

"My Best Sale; How It Was Made"

The competition is open to everyone who ever sold a car, truck or accessory, but all articles submitted must be received prior to September 1st, next. Non de plumes may be employed, if desired.

If ever YOU made a sale of which you are particularly proud, now's a good time to prove it.

All Contributions to be Addressed:
Contest Editor, Motor World, 1600 Broadway, New York

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On July 7th

Premier's new contract will be ready, when dealers' applications and territorial allotments will be taken up for consideration. The success of the

Little Six Premier

America's Greatest Touring Car

has made Premier one of the most sought and profitable high-grade lines in America.

It has doubled Premier business for the dealer and for the factory this year.

No other high-grade manufacturer can show the volume and percentage of increase of the Premier.

Not only the Premier line, but Premier's new contract is an attractive proposition for dealers.

A further production increase of 50 per cent is planned for next season to meet the increased demand.

If interestea, we suggest that you communicate with us at once by wire or letter

Premier Motor Mfg. Co., Indianapolis

Builders of Successful Sixes for Seven Years

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Lancia
Dealers Make Good

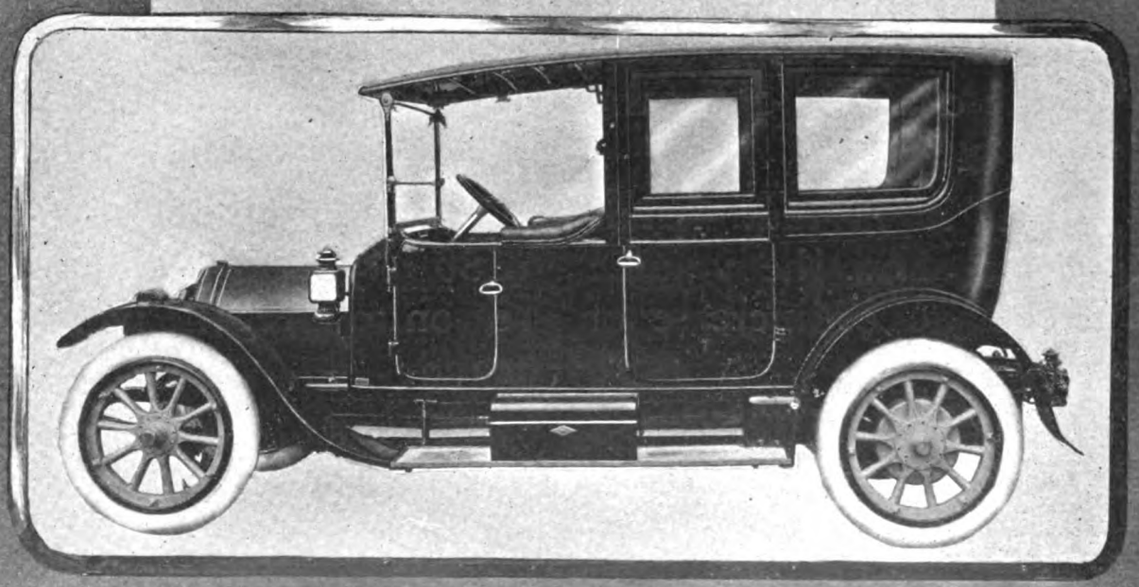
In handling the Lancia, the dealer automatically creates an exclusive and most desirable selling connection—and the fact that he may be surrounded by many American agencies lends still *more* prestige to his own proposition.

You, Mr. Dealer, can sell Europe's most exclusive product at American prices and you can, on this basis, offer Lancia cars and equipment to those who are fastidious not only in regard to rakish, unusual European design, but who also understand the actual service value of a car made in Europe, where steel making is an exact science and where engineering genius of the world has reached the high water mark.

Canvass your list of prospects—you can interest plenty of them in a very unusual and distinctive type of motor car, with racing and endurance records back of it that are beyond cavil.

We await your inquiry and we promise our selling co-operation.

ADAMS-LANCIA CO.
235 West 58th St., New York



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SPLITDORF

"Always There"

"Forewarn'd, Forearm'd"

applies with peculiar force to the spark plug situation, today. We warn YOU to insist upon the genuine SPLITDORF PLUG—the plug with the hexagonal porcelain and carrying the SPLITDORF TRADEMARK stamped on the shell.

We want you to forearm yourself against spark plug trouble by insisting upon SPLITDORF PLUGS —the genuine COMMON-SENSE PLUG.

DON'T be persuaded by any "just as good argument"—you **want** SPLITDORF PLUGS and you **should have** SPLITDORF PLUGS if you desire a freedom from any plug trouble.



SPLITDORF PLUGS are gas-tight, soot-proof, and unbreakable—they don't short circuit or carbonize. They are the leading plugs for every day usage on the market—heed our warning and INSIST upon the genuine SPLITDORF **NOW** and AT ALL TIMES.

Remember, All! "New ignition for old" is our slogan--We have a SPECIAL EXCHANGE proposition of the greatest interest to every owner of a gasoline motor who would save time and money. Write or call TODAY for particulars.

SPLITDORF ELECTRICAL COMPANY

ATLANTA, 8 Harris St.
BOSTON, 180-182 Massachusetts Ave.
CHICAGO, 64-72 E. 14th St.
DETROIT, 972 Woodward Ave.
KANSAS CITY, 1823 Grand Ave.
LOS ANGELES, 1226 S. Olive St.
NEWARK, 290 Halsey St.
NEW YORK, 18-20 West 63rd St.
PHILADELPHIA, 210-212 N. 13th St.
SAN FRANCISCO, 1028 Geary St.
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FACTORY: Newark, N. J.

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12 Year Spark Plugs Trouble Proof

You can guarantee "SOOT PROOF" spark plugs to be self cleaning and free from short circuits. They will never grow feeble, balk or leak.

Millions of motorists know from experience that "SOOT PROOF" spark plugs invariably last as long as the motor itself.

Millions are now in daily use. You will find a ready sale for "SOOT PROOF" spark plugs because half the motorists you meet know that "SOOT PROOF" spark plugs end all spark plug troubles.



C. A. MEZGER
(INCORPORATED)

Soot Proof
Spark Plugs

15 Canal Place
New York

Philadelphia, 1427-33 Vine St., Petry-Cassidy, Inc.

Chicago, 1430 Michigan Boulevard, F. E. Sparks.

Detroit, Ford Building, H. E. Butcher.

Portland, 329 Ankeny St., Hughson & Merton.

Seattle, 924 E. Pike St., Hughson & Merton.

San Francisco, 530 Golden Gate Ave., Hughson & Merton.

Los Angeles, 1229 South Olive St., Hughson & Merton.



Drawing Trade

The old storekeeper made a shrewd move when he placed a drinking trough in front of his store. It was his way of encouraging the country trade.

The modern automobilist is just as human as the farmer. He dislikes to pump up tires. He will go out of his way to find compressed air. It is the little courtesies which you extend to him that make him your friend and customer.

Progressive dealers readily appreciate the silent sales-making qualities of the Hale Curb Box and hundreds are installing complete outfits, not only for curb use, but for inside service as well. The box may be installed in the sidewalk, near the curb, or in the garage flush with the floor. It makes opportunities for the sale of accessories and fuel, for it puts the obligation on the motorist to reciprocate the courtesy you extend through your Hale Curb Box.

Get the details at once. Send for bulletin 12-W.

The Hale-Christy Company
Cleveland **Ohio**



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THE Packard Electric Company is the only concern which specializes and concentrates on the production of cable for ignition and lighting service on automobiles and motor boats.

Packard CABLE

Tested Cable

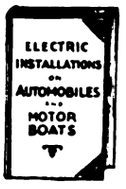
BEFORE it leaves the Packard factory every foot of Packard cable has had a breakdown test far in excess of any possible requirements of the service. A weak spot in the insulation cannot pass without detection.

The final test of Packard cable however is its performance in actual service. On this test we stand, and on it we have built our reputation.

During long, continued hard usage under all conditions it gives best service and is therefore the cheapest

Send For This Book

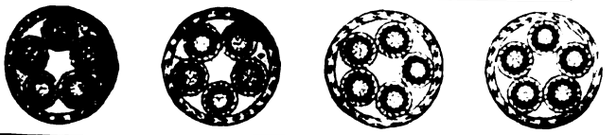
The only book ever written that covers every phase of electric installation on automobiles and motor boats. Tells how to locate electrical trouble, how to avoid it and how to correct it. Sent postpaid for 25c.



The Packard Electric Co.

Dept. D 50 Warren, Ohio

Packard denotes superior Quality





Our departments of engineering and design co-operate with the men who build the car—combining their weight of experience in radiator making with the particular requirements of the designer of the automobile.

We will not, however, endanger the reputation we have made by making radical changes from established design. In standing by this resolve, we have, on rare occasions been obliged to lose business—something to be regretted, but none the less necessary.

Mayo Radiators are built to hold the engine at an even temperature—not too hot to endanger its usefulness, nor too cool to lose its efficiency. "Tolerance" in change of design is therefore liberal—but it has its limits.

If you, as the man who has sold the car, find yourself in "hot water" so to speak, with a leaky, inefficient radiator and a "superheated" customer, then be sure this car was not equipped with a Mayo Radiator. Dealers who sell cars Mayo equipped know that the radiators will stand up under any unfavorable condition short of a blow with a hammer or a bad collision.

Mayo Radiator Co.

NEW HAVEN, CONNECTICUT

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Saved!

Weed Tire Chains enable you to safely make sharp turns and quick stops when a momentary loss of control means loss of life.

The above picture illustrates one of the numerous situations in which you may be placed during bad road weather — when suddenly someone appears directly in your path and in a fraction of a second you must make a sharp turn and apply the brakes. It is then you require a firm unfailing grip on the road which can only be obtained by equipping ***all*** tires with

Weed Anti-Skid Chains

The Only Device that Absolutely Prevents Skidding

The memory of one accident deters future enjoyment in the use of a car. Why run the risk of such accidents and why forfeit the pleasures of motoring ***forever after, when safety can surely be yours by equipping all four tires with WEED CHAINS?***

WEED CHAINS cannot injure tires because "they creep." Easily put on in a jiffy without the use of a jack or other tools. Directions packed with every pair.

Universally Used

WEED CHAINS are generally regarded as the most profitable accessory for the automobile Dealer — Extensively Advertised — Easily Handled — Quick Sellers — No Dead Stock — No Dull Seasons — Liberal Profits — Satisfaction Guaranteed.

Attractive, Decorative, Convincing Hangers regularly supplied to Dealers upon request

At all dealers selling Auto Supplies

Weed Chain Tire Grip Co., New York

Manufactured in Canada by

DOMINION CHAIN CO., Limited, 137 McGill St., Montreal, Can.





Kelly - Springfield

Automobile Tires

When you buy automobile tires you've got to put your faith in something. When you buy Kelly-Springfields you are putting your faith in a name that has stood for the longest wear since rubber was first applied to wheels—a name that marks the only tire of prominence strictly hand made.

Kelly-Springfield Tire Company

Corner Broadway and 57th Street, N. Y.

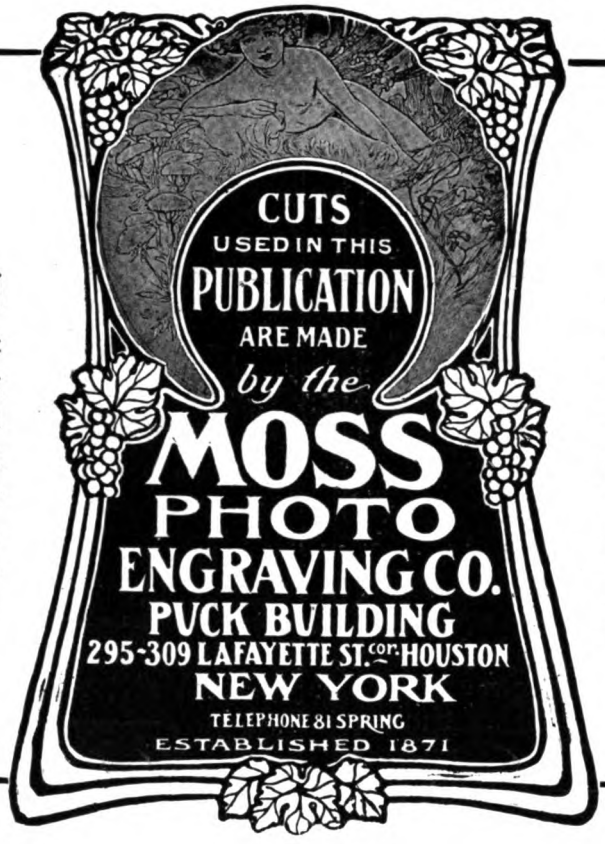
Branch offices in New York, Chicago, Philadelphia, Boston, St. Louis, Detroit, Cincinnati, San Francisco, Los Angeles, Cleveland, Baltimore, Seattle, Atlanta, Akron, O., Buffalo.

The Hearn Tire & Rubber Co., Columbus, O.
Bering Tire & Rubber Co., Houston, Texas.
Boss Rubber Co., Denver, Colo.
Todd Rubber Co., New Haven, Conn.
H. R. Olmstead & Son, Syracuse, N. Y.
Southern Hdwe. & Woodstock Co., Ltd., New Orleans, La.
Atkinson Tire & Supply Co., Jacksonville, Fla.
Central Rubber & Supply Co., Indianapolis, Ind.
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K & S Auto Tire Company, Limited, Toronto.

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is based on the fact that we have been handling the engraving of several prominent trade and general publications for years to the utmost satisfaction of both publishers and advertisers



SERVICE

The quality of work turned out by this plant is re-inforced by our facilities for deliveries as promised. Your work will be put through with the same care and dispatch given to publishers whose work must be right—and "right on the dot."

Dealers and Accessory Manufacturers Will Profit Greatly

by keeping abreast of the rapid development of the "two-wheeler."

The Bicycling World FOUNDED 1877
and
Motorcycle Review

Published Every Tuesday—$2.00 a Year

This publication records weekly all that is of interest to the trade and to the rider. ¶If you aren't fully acquainted with the paper and the possibilities offered by the field it covers send for free sample copy.

BICYCLING WORLD AND MOTORCYCLE REVIEW, 1600 Broadway, New York

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MANUFACTURERS ATTENTION

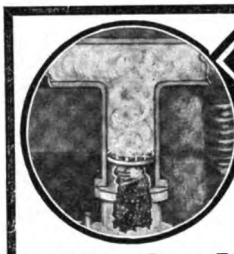
PLEASURE and COMMERCIAL car agency WANTED for Boston and ALL or part of New England.

By Massachusetts CORPORATION

well established, with ample resources and fine sales organization.

Want propositions only from LIVE, PROGRESSIVE Manufacturers who are in a position to stand back of their product and co-operate with us to the limit. **Address**

MOTOR AGENCY
Care of C. BREWER SMITH
85 Devonshire Street (Room 508) Boston



MONDEX

Auto Devices

LEAD the World for Efficiency and Economy
At Dealers Everywhere

Mondex-Helix Gas Mixer

Reduces Your Gasoline Bills 25 to 40 Per Cent.
Price, Mondex-Helix, $5.00 All Sizes

Mondex Shock Preventer

Reduces Your Repair Bills 100 Per Cent.

Saves Wear and Tear of Tires and Eliminates All Vibration.

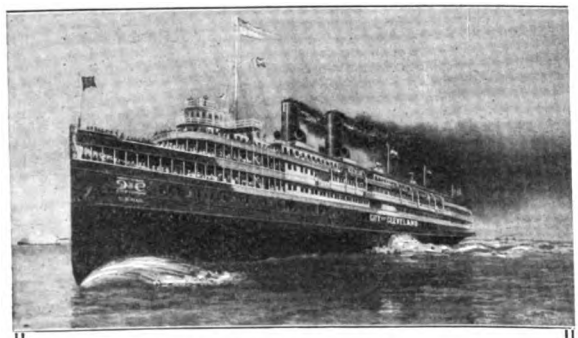


Motor Car Racing says: "Mondex Shock Preventers proved they are right in the highest court of mechanical test known."

Write for Booklet "W."

Agents Wanted Everywhere

THE ARISTOS CO.
250 W. 54th St., N. Y.



Automobile Owners and Tourists

Should break their journey and avail themselves of the excellent facilities offered by the D. & C. Lake Lines, operating daily service between Detroit and Buffalo and Detroit and Cleveland.

Enjoy the delights of the cool breezes from Lake Erie and resume your journey in the morning after a refreshing night's rest. Special attention given by this company to the handling of automobiles. Rates quoted on application (state wheelbase); tanks of automobiles must be emptied of gasoline before being shipped. Supply is furnished free by dock attendants before leaving dock.

Roads in this section of the country are in first class condition; new road between Detroit and Toledo; tourists speak highly of the road between Buffalo and New York.

On your trip this summer, bear in mind "The Water Way is the Comfortable Way."

Send two-cent stamp for illustrated pamphlet and Great Lakes map. Address L. G. Lewis, Gen'l Pass. Agent, Detroit, Mich.

DETROIT AND CLEVELAND NAVIGATION CO.

General Offices, Detroit.

Philip H. McMillan, President.
A. A. Schantz, Vice-Pres. and Gen'l Mgr.

What Is a REAL Tire Protector?

One that does not chafe the tires.

What is the cause of chafing?
Loose fitting protectors, due usually to stretching.

Can stretching be prevented?
No---leather, and even fabric, is bound to stretch.

Can it be overcome?
Yes---by pulling the protectors tight by means of stiff springs which take up the stretch automatically.

Are such protectors made?
Yes---the spring attachment is a patented feature of the oldest and most successful make of protectors---

Woodworth Treads

Dealers! Write for particulars of our selling proposition and demonstrating outfit.

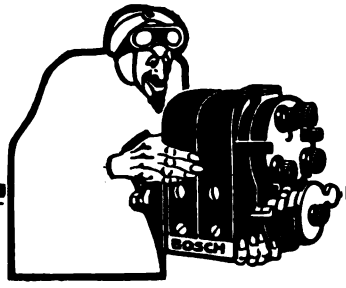
Leather Tire Goods Company
Niagara Falls, N. Y.
New York Store
1608 Broadway
D. A. FALKINBURG & CO.
1210 Webster Ave., Chicago



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The Hollenden Hotel.
SUPERIOR AVE. Cleveland EAST 6TH STREET

European Plan
800 Rooms
Rate 2 to 5 Dollars
Home of
Cleveland Automobile Club.
Touring
Information



You Can Have Perfect Ignition

YOU can insure yourself satisfaction, utmost efficiency and thorough reliability by refusing "some magneto and plugs" and insisting upon the standard Bosch Magneto and Bosch Plugs.

Be Satisfied **Specify Bosch**

Literature sent on request

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224 West 46th Street New York

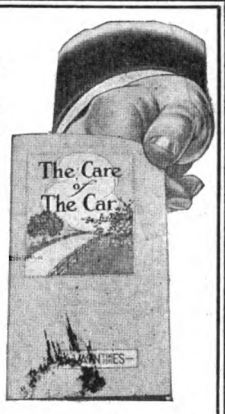
The SCHRADER Universal Tire Pressure Gauge



For Sale by Tire Manufacturers, Jobbers, Dealers, Garages or

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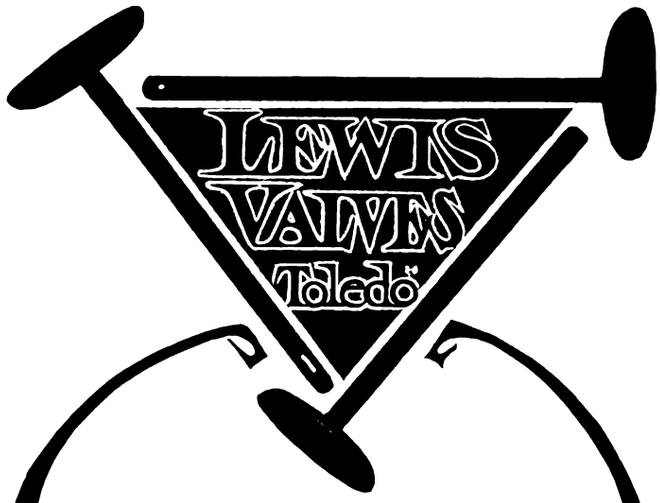
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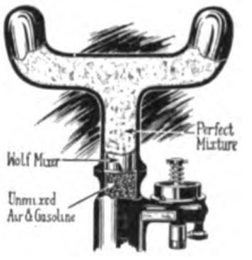
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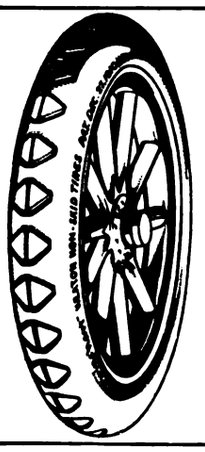
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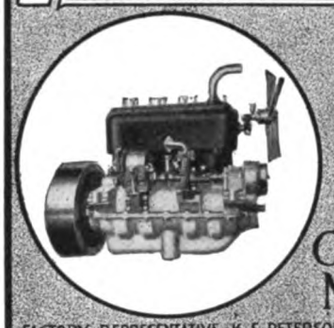


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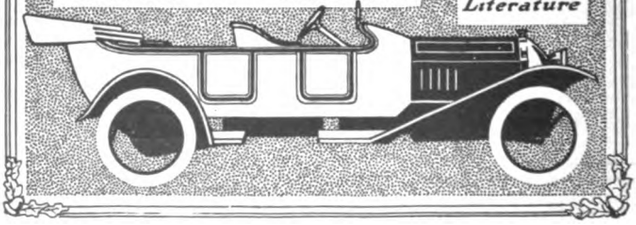
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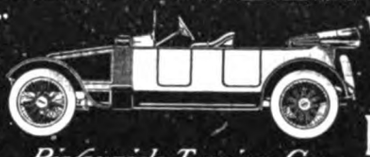
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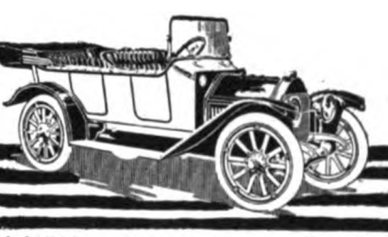
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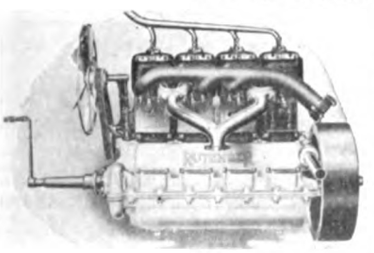
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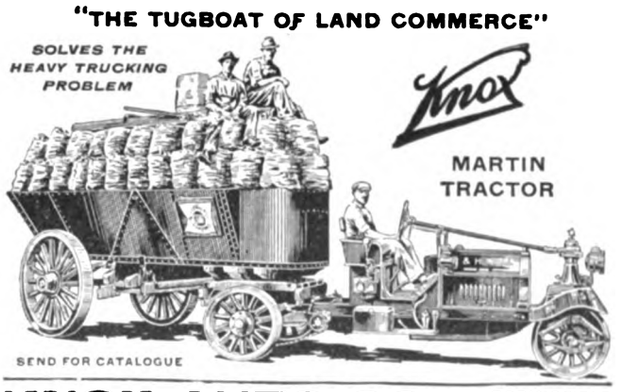
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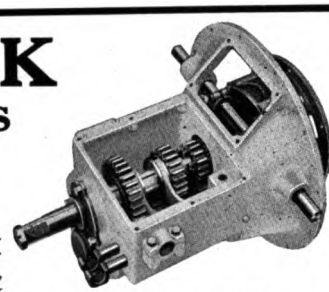
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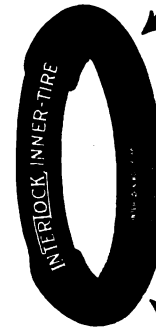
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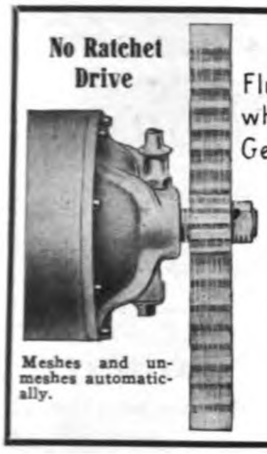
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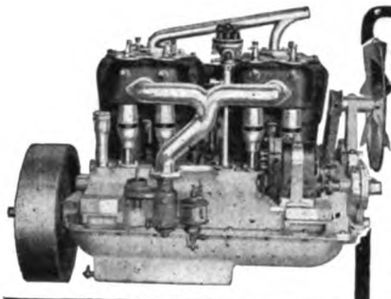
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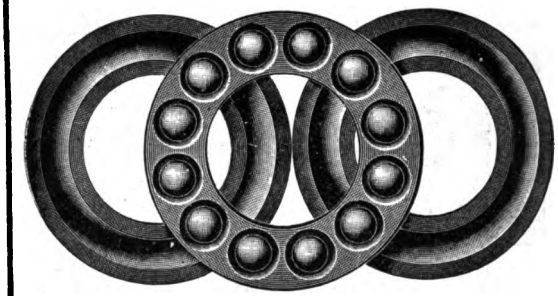
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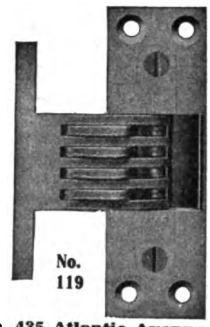
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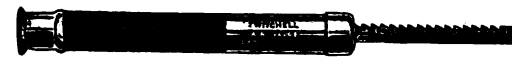
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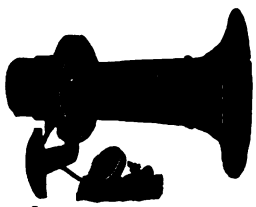
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THE BICYCLING WORLD AND MOTORCYCLE REVIEW WILL INTEREST YOU

PUBLISHED EVERY TUESDAY AT

1600 BROADWAY, NEW YORK

$2.00 Per Year *Specimen Copies Gratis*

United States Tires

are good tires

They cut down tire bills

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Dart
MOTOR TRUCKS

THREE EXCEPTIONAL MODELS:

Model ED—1,000 lbs. capacity (2 cyl.).....$ 750
Model B—1,000 to 2,000 lbs. capacity (4 cyl.)..... 1,100
Model C—2,000 to 3,000 lbs. capacity (4 cyl.)..... 1,775

Write us for full information and liberal specifications.

THE DART MOTOR MANUFACTURING CO.
WATERLOO, IOWA (18)

Type 35 Series J Raceabout



Guaranteed Speed — Mile in 51 Seconds

MERCER

The Mercer's speed and endurance record at Indianapolis and other important contests is a valuable asset from the dealer's viewpoint.

Some desirable territory open. Write today.

Mercer Automobile Co. 700 Whitehead Road Trenton, N. J.

Simplicity, Strength, Durability

COVERT

Three important points in

Covert Transmissions

You would not think of putting an inferior motor in your car, would you? Superior transmissions are as essential as the best motors.

Covert Motor Vehicle Company
Sales Office: Ford Bldg., Detroit Factory: Lockport, N. Y.

Hupmobile

"32" Touring Car	$1,000
"32" 6-Passenger Touring Car	1,200
"32" Roadster	1,000
"32" Covered Delivery	1,075
"20" Runabout	750

All Models F. O. B. Detroit. Fully Equipped.

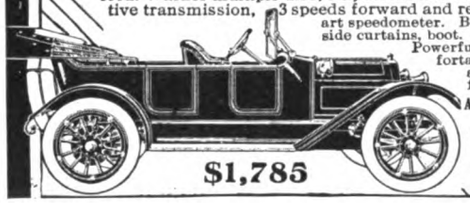
Literature sent upon request

HUPP MOTOR CAR COMPANY
1254 Milwaukee Avenue Detroit, Mich.

The Kentucky Thoroughbred

Ames "45"

With Electric Self-Starter. An Electric Starter of proved efficiency is one of the features of the Ames "45"—a car with every essential refinement contributing to comfort, yet priced at $1,785. Without Starter, electric lighted, $1,635. Made with well-known "Amesbilt" body. 5-passenger, motor-driven electric lights. Perfect cooling system. Force-feed pump. Schebler Carburetor, new Remy dual system high tension magneto, oil-driven pumps. Sight-feed. Warner multiple disc, Raybestos-lined clutch. Selective transmission, 3 speeds forward and reverse. Stewart speedometer. Best mohair top, side curtains, boot. 36x4-inch Tires Powerful, speedy—comfortable—unequalled at price. Write for catalog.



$1,785

AMES MOTOR CAR COMPANY
Owensboro, Ky. (19)

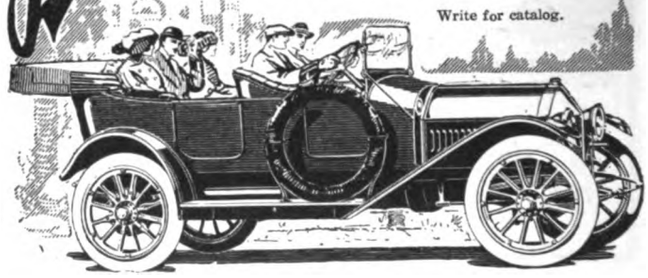
Jackson

NO HILL TOO STEEP NO SAND TOO DEEP

Olympic	"four" Five passenger.	$1500
Majestic	"four" Five passenger.	$1975
Sultanic	"six" Seven passenger.	$2650
Sultanic	"six" Five passenger.	$2500

Jackson Automobile Co., 1204 E. Main St., Jackson, Mich.

Write for catalog.





EMPIRE

"The Little Aristocrat"

Model 31 108 Inch Wheel Base

The Completely Equipped Empire five-passenger touring car for $950—Equipment includes Demountable Rims, Oil Sight Feed, Dash Air Adjustment, Mohair Top and envelope, Windshield, Prest-O-Lite tank, Speedometer and Eisemann Magneto

EMPIRE AUTOMOBILE COMPANY, Indianapolis, U.S.A.

KISSELKAR TRUCKS

Complete line of commercial vehicles—all type bodies—special bodies designed. Reserve power, low fuel cost—sizes to give economical service under any conditions.

1500 lb., 1, 2500 lb., 2, 3, 4, 5, ton trucks

KisselKar Service keeps down operating costs. Write for big special truck catalog illustrating many models.

Kissel Motor Car Co., 159 Kissel Ave., Hartford, Wis.

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PERFECTION SPRING COMPANY
Specialists in **Spring Suspension** High Grade Only
CLEVELAND, OHIO

The Reasons for Jencick Quality and Jencick Prices are worth knowing.
JENCICK MOTORS For Motor Trucks
from base to spark plug, have features that are "Different and Better."
JENCICK MOTOR CORPORATION, Port Chester, New York

The Otho SYSTEM
for Self Starting Lighting Ignition Signalling
Bright Inside the Fenders
Otho Motor Co, 60 State St, Boston, Mass.

American Axles
Found Only on High Grade Cars
THE AMERICAN BALL-BEARING CO.
Cleveland, Ohio

PENNSYLVANIA
Oilproof
VACUUM CUP TIRES
Making Their Mark Everywhere
Pennsylvania Rubber Company
Jeannette, Penn.

NATIONAL Mixer and Primer
Makes any car start easier in cold weather; adds 10 to 40% to power and mileage. Simple, easily installed, guaranteed effective on any motor. Get details and price.
NATIONAL MANUFACTURING CO., Kalamazoo, Mich.

Reo the Fifth
Final and crowning achievement of R. E. Olds, pioneer designer of Autos. A standard size 30 to 35 horsepower four-cylinder car of modern refinements, priced at only $1,095.
R. M. OWEN & CO., General Sales Agents.
REO MOTOR COMPANY, - - Lansing, Mich.

The Bush Radiator
THE BUSH MANUFACTURING CO.
HARTFORD, CONN.



BOYCE MOTOMETER
PAT'S PEND'G
Know the Heat of Your Motor While Driving!
MOTOMETER CO., Inc., 904 U. S. Rubber Building. B'dway & 50th St., N. Y.; Chicago Branch, 1222 Michigan Ave.

METZ "Twenty-Two" $495
Stylish Roadster, completely equipped, fully guaranteed. 4-cylinder 22½ H.P. water cooled motor, Bosch magneto, artillery wheels, best quality clincher tires. Makes 5 to 50 miles per hour, 28 to 32 miles on 1 gallon of gasoline. Great hill climber. You can secure EXCLUSIVE SALE in your territory. Write for Book "L."
METZ COMPANY, Waltham, Mass., U. S. A.

Guide Motor Lamps
(ELECTRIC)
Write for "Guide Books" Nos. 1 and 6
GUIDE MOTOR LAMP MFG. COMPANY
CLEVELAND, OHIO (1)

SIMMS MAGNETO "American Made"
NOW READY FOR THE TRADE
Highest Efficiency—Good Service Guaranteed
THE SIMMS MAGNETO COMPANY, 1790 Broadway, N. Y. City Factory, Bloomfield, N. J.

We Specialize on
Finishing Crank Shafts
Only
MICHIGAN CRANK SHAFT CO., Lansing

CHAMPION SPARK PLUGS
Over 70% of all the cars made in America today are factory-equipped with specially designed **Champion Spark Plugs.**
Select from our complete line the **Champion Spark Plug** best fitted for your motor car or motor boat.
For Sale by Dealers the World Over
CHAMPION SPARK PLUG CO., 106 UPTON AVENUE TOLEDO, OHIO

NATIONAL POWER PUMPS - $15
DEALERS! It is EASIER to sell a GOOD spark plug pump than a poor one, and the sale sticks. Better still, YOUR PROFIT is a couple of dollars MORE. Let us show you why the "National" is MUCH BETTER, and how we help you sell them. Write for special dealer's proposition today, and get your share of the profits.
Manufactured by
NATIONAL MOTOR SUPPLY CO., 5601 Euclid Avenue, Cleveland, Ohio

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AMERICAN KUSHION KORE

A tire filler 10 to 20 per cent. lighter than any other tire filler. A big proposition for dealers who are on the alert for more and better business. Write for details.

AMERICAN KUSHION KORE TIRE CO.
Buffalo, New York

POLSON
Quality Windshields
Auxiliary Seats, Bumpers and Gas Starters
POLSON MANUFACTURING CO., Buffalo, N. Y.

HESS AXLES

Now standard on fourteen makes of America's leading cars and still growing. Send for blue-prints and specifications—or consult our engineering department.

HESS SPRING AND AXLE COMPANY
CARTHAGE, OHIO



MOTZ Cushion Tires
For Pleasure Cars and Light Delivery Cars
Send for Booklet 58

A—Shows *double*, notched treads.
B—Shows undercut sides.
C—Shows slantwise bridges.
D—Shows absorbing means when passing over an obstruction.

The Motz Tire and Rubber Co.
Executive Office: Akron, Ohio
Service Stations in All Principal Cities

Mosler
Spit Fire Plugs
ARE THE BEST
A. R. MOSLER & CO.,
P.O. BOX "M" MT. VERNON, N.Y.

Schafer Ball Bearings
Famous for Their Durability
BARTHEL & DALY, 42 Broadway, New York

The Ford Water Circulator

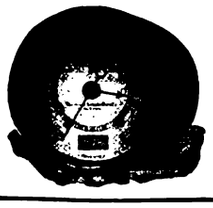
forces the water from radiator through cylinder water jacket, maintaining rapid circulation when car is in motion. Write for descriptive matter if you handle Ford cars.

THE FULTON-McCUTCHAN CO.
1146 Michigan Ave. CHICAGO, ILL.

As a Warm Hand Wheel Dealer

You will reap generous profits from easily made sales all over your territory. Every car owner who drives in winter will want this device as soon as he sees it. Write for Details.

The Warm Hand Steering Wheel Co. 527 Fifth Ave. New York



RELIANCE
"The Speedometer of Quality"

Special features that eliminate speedometer troubles. Send for the booklet.

RELIANCE SPEEDOMETER COMPANY
134 Eliot St., Boston, Mass.

Every Stutz Car

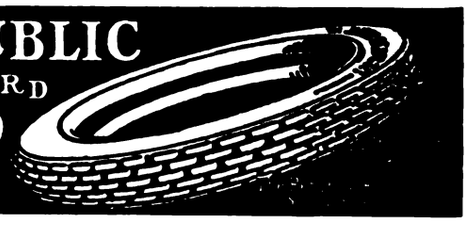
is exceedingly easy-riding and comfortable. The straight line low slung body, deep upholstery and luxurious appointments of the Sturdy STUTZ give it that aristocratic design which lends dignity and quality to a high class motor car. Write today for advance booklet A-15 Sturdy STUTZ Announcement.

STUTZ MOTOR CAR COMPANY, Indianapolis, Ind.

GOODYEAR
AKRON, OHIO.

This name on Automobile Tires and Rubber Accessories signifies inherent qualities of material and workmanship that insure the maximum of service at the minimum of expense. (673)
THE GOODYEAR TIRE & RUBBER COMPANY, Akron, Ohio

REPUBLIC
STAGGARD
TREAD
The Tire Perfect!



AUTO-TOP FABRICS
OF EVERY DESCRIPTION
Samples and Prices on Request
L. J. MUTTY COMPANY, Boston

Warner Auto-Meter
MAGNETIC PRINCIPLE

95% of all the speedometers to be made during 1913 will be built on the magnetic principle.

Warner Auto-Meter Factory, Beloit, Wis.
Address Dept. 4.
Branches in all principal cities all over the world.

QUICK SALES—BIG PROFITS FOR DEALERS

Here is an accessory that will not stay on the shelf. It sells on sight.

MARVEL STEAM VULCANIZER

Automatic, therefore safe for rubber. Uses alcohol or gasoline. Low priced. Send for sales plan and sample Vulcanizer.

The MARVEL AUTOMOBILE SUPPLY CO., 716 Bolivar Rd. Cleveland, O.

Prest-O-Lite

The ONLY gas tank that when empty, can be immediately exchanged for a full one, ANYWHERE and ALWAYS.

The Prest-O-Lite Company, 287 Speedway Indianapolis, Ind.

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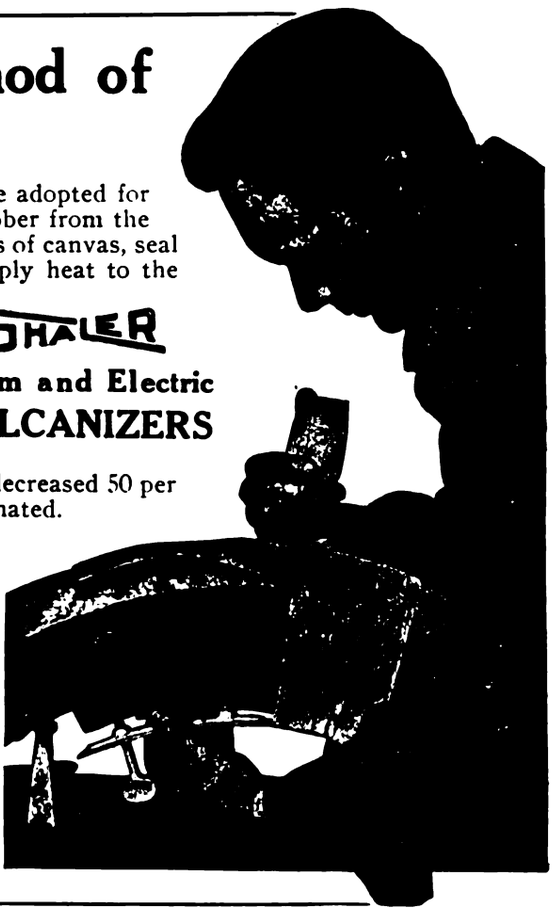
The Wrapped Tread Method of Mending Blow-outs

Repair tires by the approved method that tire makers have adopted for **making** them. Instead of cutting away a lot of fabric and rubber from the **outside** of the tire, reinforce it from the **inside** with a few layers of canvas, seal the hole through the tire with a plug of raw rubber, and apply heat to the inside and outside at the same time. Thus you can make a repair that is actually stronger than the rest of the tire—one that cant' give way.

SHALER

Steam and Electric VULCANIZERS

This method is economical, requiring only about half as much material as any other system. It is simple—anyone can do the work perfectly. Only one set of forms is required for handling all sizes of tires. By curing from both sides of the tire at once the time of curing is decreased 50 per cent. and all tendency toward overcuring the tire is eliminated.



Wrapped tread repairing can be done best only with Shaler Vulcanizers because they have the exclusive feature of a temperature control that is automatic. This insures the maintenance of a uniform temperature from beginning to end of the cure and does away with constant watching by the operator. He can devote **all** of his time to preparing repairs while the vulcanizer is at work.

Write today for details of this moneymaking process

We have published a book of especial interest to garage men. In addition to other valuable information it contains description of Shaler tire repair outfits. White for free copy of "Common Sense About Tire Repairs."

C. A. SHALER CO., 426 4th St., Waupun, Wis.



Service Stations

for Electrically Lighted Cars

For the convenience of car owners Edison Mazda Automobile Lamp Service Stations have been established all over the country for the renewal of lamps.

These stations enable the motorist to readily obtain the right kind of lamp that will give the most efficient and satisfactory service with the lighting system on the car.

Edison Mazda Automobile Lamps may be obtained wherever either of these signs are seen—locally or when touring.

Look for the signs; they indicate progressive dealers and garages where other high-grade automobile accessories may be purchased.

Remember every sign like the above means lamp service—service backed by the largest electrical manufacturer in the world.

General Electric Company

Edison Lamp Dept. Lamp Agencies Everywhere **Harrison, N. J.** 4211

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For Sale—Wants—Exchange

15 cents per line of six words, cash with order: — In capitals, 25 cents per line —

A market place where Dealers, Jobbers and Manufacturers may buy, sell or trade used cars, parts and appliances and where help or situations may be secured at a nominal cost.

A PRESERVER of mohair automobile tops. Puts new body, color and life into worn out mohair. Makes old mohair look like new. PEERLESS AUTO TOP DRESSING also waterproofs leaking tops. THE COLUMBUS VARNISH CO., Columbus, Ohio.

KEROSENE FOR AUTOMOBILES.
New Model B uses successfully half and half mixture lowest grades kerosene and gasolene. Satisfaction guaranteed or money refunded. Greatly increased power, very slow speed on high. Starts easy at zero. Special agents' prices. Dept. MW, THE AIR-FRICTION CARBURETOR CO., Dayton, Ohio.

AUTOMOBILE CYLINDERS reground, new pistons and rings fitted. Garage air compressors. CAST IRON BRAZING CO., Manchester, N. H.

WANTED—A mechanic with some capital to take working interest in Garage and sales agency. Fine location, well established. Address A. J. K., care Motor World.

RE-GROUND.
We carry a complete stock of re-ground bearings for immediate exchange. 'Phone Col. 5889.
AHLBERG BEARING CO.,
"The Oldest Concern in the Business,"
Room 1116, 1790 Broadway,
New York City.
2636 Michigan Ave.,
Chicago.
805 Woodward Ave.,
Detroit.

IS THE FINISH ON YOUR CAR DULL?
Apply Boyer's Automatic Re-finisher to your automobile today. Tomorrow it will look as though it just came from the factory. Finest thing in the world for dull hoods. Particulars free. BOYER CHEMICAL LABORATORY CO., 3 E. Michigan St., Chicago.

A VERY little used Packard "30" 7-passenger touring car, run but 7,200 miles; condition as good as new, looks like new; Packard service follows the car; upholstery all slip covered; has five extra casings and inners, electric side, tail, dash, and trouble lights, Kellogg four cylinder, gear driven air pump, Klaxon horn; price $2,000; reason, need the money; will demonstrate; no trades. Address W. L. McCLOUD, Sheldon, Ill.

SACRIFICE SALE.
One new model M-C 5-passenger Thomas car, run less than 500 miles. The best they ever made.
One 16-20 passenger sight-seeing 72 H.P. Thomas.
CONRAD BROTHERS, Scranton, Pa.

COMPLETE list New York State registration, 50 cents per thousand names. OWNERS, AUTO LIST CO., Albany, N.Y.

FOR SALE—A 5-ton Mack truck and a 6½-ton Saurer truck, both in first-class condition and can be seen in operation; will be sold at a bargain. Apply to CENEDELLA & CO., Hollywood Ave., Crestwood, N. Y.

AUTOMOBILES AND PARTS—Largest stock ever known. Prices on anything. PROGRESS BROKERAGE CO., 527 Grant St., Buffalo, N. Y.

THE inside of my automobile top was faded, water and grease stained, and looked bad until I used PEERLESS LINING DYE. Then I had a black lining that was soft and pliable. THE COLUMBUS VARNISH CO., Columbus, Ohio.

FIRST-CLASS automobile man wants partner with some money to open garage and shop in good automobile town; have had twelve years' experience; can deliver the goods. Address POST OFFICE BOX 319, Fort Worth, Texas.

STODDARD-DAYTON, 1911, 40 H.P., in good order. Price, $900.00. J. RYAN, 109 Reade St., New York City.



An ad. like this will cost you $1.20 for each insertion.

These columns offer you an opportunity to appeal to an audience of 8,000 readers whose merchandising taste is being cultivated

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For Sale—Wants—Exchange

15 cents per line of six words, cash with order.
— In capitals, 25 cents per line —

A market place where Dealers, Jobbers and Manufacturers may buy, sell or trade used cars, parts and appliances and where help or situations may be secured at a nominal cost.

PRACTICAL automobile mechanic, eight years' experience overhauling all makes, wants repair work at your own garage; $3.50 day; furnish my own tools, guarantee first-class work; small jobs wanted; before buying a used car or truck let me examine it for you. Address ARTHUR WOOD, 195 Linden St., Brooklyn, N. Y.

MERCEDES AUTOMOBILES, all models bought, rebuilt and sold.
MERCEDES IMPORTED PARTS.
Eastern agents for the famous ZENITH CARBURETOR.
MERCEDES REPAIR CO.,
159 E. 54th St.
'Phones, Plaza 5100-5101.

FORD OWNERS—You can increase the life of your tires 25% by fitting your car with Wire Wheels. Will also improve riding qualities of your car and make it up-to-date. Write, RACINE AUTO PARTS CO., Box 86, Racine Jct., Wis.

WILL maintain your car for $5.00 per month. Gasolene or electric automobiles. V. G. PHILBRICK, 2415 Michigan Ave., Chicago, Ill.

weekly to the highest degree by our articles on "Wide Awake Merchandising." Look at the cost as shown in the margins.

An ad. like this will cost you $1.05 for each insertion.

I MADE an old leather top, whose finish was dead, better than new leather. It was soft and the finish lasted, by using PEERLESS LEATHER TOP DRESSING for black leather only. THE COLUMBUS VARNISH CO., Columbus, Ohio.

FOR SALE—One of the largest and best equipped garages in New Jersey, doing a large repair and storage business, also a big hacking and trucking business. Fully equipped shop. This is a bargain for a hustler; it is now making big money; terms easy. Box 260, care Motor World.

ARE YOU in need of any additional help in any department of your business? Are you out of employment or looking for a better connection? Have you second-hand apparatus of any kind or do you want to buy second-hand material? Have you a factory site for sale or do you want to buy one? If so, use the Want and For Sale column of the Motor World. Seven words to the line, fifteen cents a line. Advertisements can be inserted over a number when it is desired and identity of the advertiser will be kept confidential.

FOR SALE—Six brand new Thomas radiators, 14 red inner tubes, 4 electric automobile lamps, electric drill, cylinder grinder and motor; also dynamo; 2,000 pet cocks, grease and oil cups; must sell immediately. KLEIN, 236 Canal St., New York City.

RESPONSIBLE sales agents will find the Hartford Electric Starting and Lighting System an easy selling proposition. Territory now being assigned. Particulars on request. HARTFORD SUSPENSION CO., 156 Bay St., Jersey City, N. J.

BROKEN CRANKSHAFTS, cylinders, crankcases, flywheels, gear teeth, pistons, perfectly welded and machined ready to replace. Guaranteed and references. Machinery up to 5 tons welded. ATLAS WELDING WORKS, 74-76-78 Irving St., Rahway, N. J.

SACRIFICE SALE—62nd St., near Ave. N, Brooklyn, N. Y. — $4,250. — Eight model one-family homes, taken under foreclosure, building on plots 27 x 100; containing 8 rooms, tile bath, hardwood trim, steam heat, electric lights, parquet floors; richly decorated, with laundry in cellar; built to sell at $5,500; are offered at $4,250, being less than cost of construction, on easy terms. Will take automobile as part payment. To reach property take Culver line to Ave. N station. L. W. PEASE, 2370 62nd St.; 'phone 7226 Main.

PEERLESS BACK AND CUSHION DRESSING.
For leather seats and cushions. Dries hard on clean leather. The color does not come off. Renews the finish. Ask your dealer.
THE COLUMBUS VARNISH CO.,
Columbus, Ohio.

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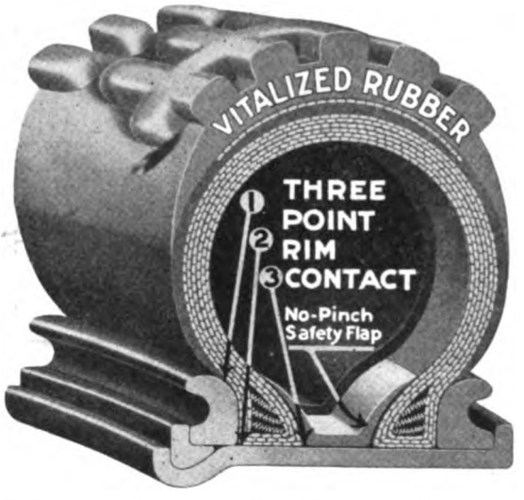
You - as a tire bill payer - now demand a vise-like rim grip-with no cutting or breaking above the rim- and here it is

It's the *rim* as much as the *road* that wears out your tires.

So we said to our Engineers:

"You must build us a tire with Perfect 3-Point Rim Contact."

They did—and they also added the No-Pinch Safety Flap for inner tube protection in



Then we called in our Chemists and said:

"Tire buyers are demanding a tough, flint-like, but resilient tread—a tire made of lusty young rubber—a tire giving the utmost mileage at no additional expense."

And the answer is

Vitalized Rubber

Diamond {No Clinch} Tires

Perfect 3-Point Rim Contact

Here is a No-Clinch tire that appeals to the hard-headed, shrewd tire buyer—the man who insists on easy riding comfort and a good liberal mileage.

Each point of rim contact in a tire is a point of support. Where the points of rim contact are not perfect, undue pressure is brought to bear at an unsupported point of the tire.

Then what happens? The result is a terrific strain on the tire that results in rim troubles, breaking above the bead and separation of the tread from the carcass.

All this is overcome in the Diamond No-Clinch because the three points of rim contact are absolutely *mechanically perfect*—the annealed steel cable wire bead holds with a vise-like, rim-grip.

Add to this the No-Pinch Safety Flap for inner tube protection, the Vitalized Rubber advantage, the famous Diamond Safety (Squeegee Tread) and you have bought rubber shod mileage that has no equal at any price.

So this time buy Diamond Vitalized Rubber Tires—you can get them to fit your rims from

Diamond Safety (Squeegee) Tread for Automobiles, Motorcycles, Bicycles

Diamond Dealers Everywhere

Be a Diamond Dealer

If you are not a Diamond Dealer, now is the time to get in line. There is a Diamond Branch near you—get in touch today.

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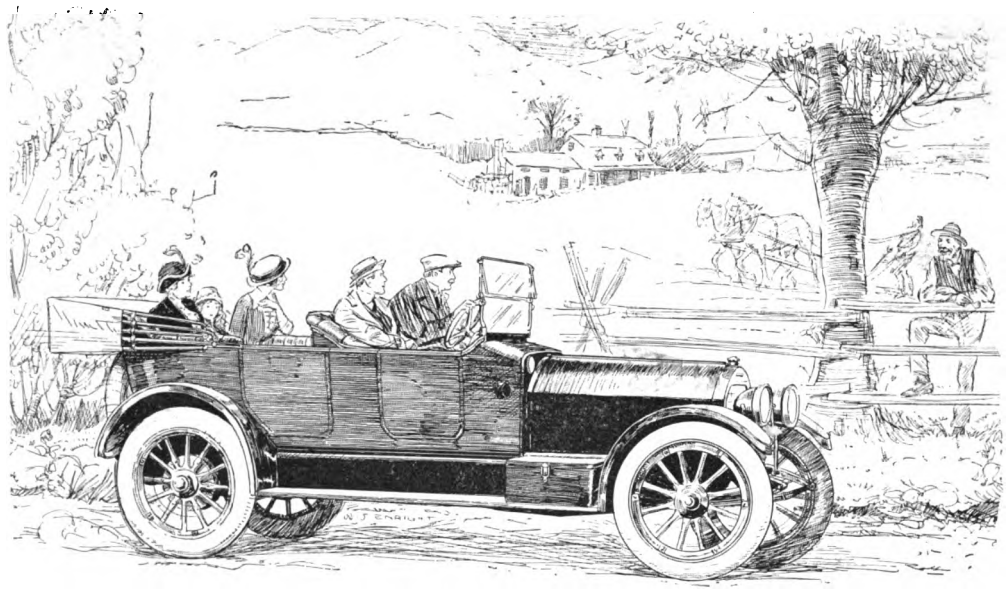
THE KLAXON AT HERALD SQUARE, NEW YORK

By the celebrated French Futurist, FRANCOIS SOUAIE

Among the heavier background lines may be found the clang of trolley-gongs, the rumble of elevated trains, the chugging of waiting motors, the grinding of taxicab brakes, the shouts of van drivers, the voices of newsboys, the gong of a passing ambulance.

CLOSER scrutiny reveals the fainter sounds — the shrill whistles of traffic police, the hum of human voices, the shuffling feet of pedestrians, the nagging, monotonous "honk" of the bulb horn. ABOVE THEM ALL, sharp and penetrating, the note of the Klaxon.

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$2150 Marion $2150

Six-Cylinder, 50 h. p. Motor
Full Floating Rear Axle
Four Double-Acting Brakes
124-Inch Wheelbase
35 x 4 1-2-Inch Tires
Westinghouse Electric Starter

Westinghouse Electric Lighting
Electric Horn Under Hood
Stewart 60-Mile Speedometer
Rain-Vision Windshield
Mohair Top, Boot, Curtains
Q. D. Demountable Rims

Left-hand Drive
Center Control
Full Turkish Upholstery
Marion Dark Blue Color
Sheffield (English) Steel Springs
Pressure Gasoline System

The Six Cylinder Master-piece of one of the Oldest Companies

The new Marion "Six" for 1914 appeals to good, substantial prospects. It justifies in every respect a higher price than cheaper cars sell for, while at the same time it is a car so fine and so substantial that the most exacting need not pay more.

It is the right type of "Six" at the right price. It is a family car; it is the kind which builds up neighborhood sales. Where one Marion is sold you will sell many more. And the 1914 Marion dealer's contract is different from any you ever read. Wire us today for particulars.

Marion Fours---37-A Touring Car; 38-A Roadster---$1475

The Marion Motor Car Co., Indianapolis, 918 Oliver Ave.

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MOTOR WORLD

A Trade Paper Giving the World's Motor News

Vol. XXXVI
No. 3

New York, July 10, 1913

Ten cents a copy
Two dollars a year

21 YEARS

of electrical experience are back of the Gray & Davis 6-volt Electric Starter

Consider what this means.

The Gray & Davis Starter is not a "hope-it-turns-out right." It is not a half-baked device hastily marketed to meet the sudden and universal demand for an electric starter.

It was designed and perfected by one of America's leading electrical engineers—a man who had 21 years' experience in constructing electric motors.

The Gray & Davis Starter is the simplest in design. It is produced by expert workmen in the finest factories of their kind in the world.

A 100%-efficient starter is the result. Leading car manufacturers have adopted it as the best. No other starter has met with such general approval from automobile manufacturers and engineers.

You can get Gray & Davis service only on the cars that are equipped with this one time-tested starter *that never fails.*

Write today for our complete catalog.

GRAY & DAVIS, Inc.
55 Lansdowne St. Boston, Mass.

GRAY & DAVIS

ELECTRIC STARTER
LIGHTING DYNAMO
ELECTRIC LAMPS

Gray & Davis Quality Equipment used partly or entirely by these manufacturers:

ALCO
AMES
AMERICAN LA FRANCE
APPERSON
CHALMERS
COLUMBIA
CRAWFORD
FLANDERS
I ENOX
LOZIER
MARITIME
MAXWELL
MIDLAND
NATIONAL
NORWALK
PAIGE
PATHFINDER
PEERLESS
PILOT
POPE-HARTFORD
PRATT
REO
B. A. GRAMM'S TRUCKS
SEAGRAVE
SELDEN
SPAULDING
STEARNS
STODDARD-DAYTON
TUDHOPE
TOURAINE
VELIE
WINTON

Published Weekly by the Motor World Publishing Company, 1600 Broadway, New York

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When you think
of Shock Absorbers
what name comes
to your mind?

**Can any dealer afford to handle cars in 1914
which are not equipped with shock absorbers?**

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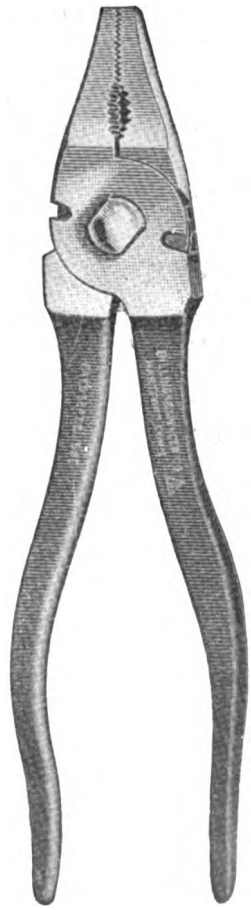
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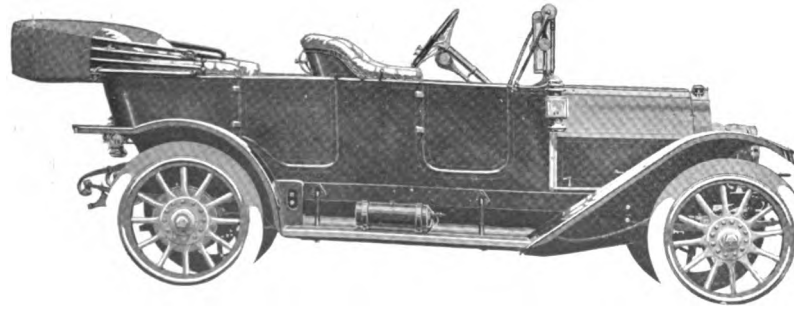
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MOTOR WORLD

Vol. XXXVI New York, U. S. A., Thursday, July 10, 1913 No. 3

FIAT BRINGS SUIT AGAINST ISOTTA FOR INFRINGEMENT

Torque Tube Construction the Point Involved — But Suit Discloses Long-Pending Fiat Patent on Two-Speed Axle.

Making known for the first time that the Italian Fiat company has developed and may use a rear axle of the two-speed type, equity proceedings have been instituted in the United States District Courts by F. I. A. T., of Poughkeepsie, N. Y., for an injunction to restrain the Isotta-Fraschini Motors Co., of New York City, from infringing its patents on a device of the kind. The patent that forms the basis for the action is numbered 1,050,049 and was issued on January 7th, 1913, to Giovanni Agnelli of Turin, Italy, and assigned to F. I. A. T. of Poughkeepsie; probably the fact that it has been "in the mill" ever since the application was filed on July 16th, 1907, accounts for its obscurity.

The axle covered by the patent, which is entitled "Driving-Gear for Motor Road-Vehicles," is not unlike the Evans and Lancia axles that have been used to some extent abroad and the Austin axle developed by the Austin Automobile Co., of Grand Rapids, Mich., and disclosed for the first time at the last Chicago automobile show; the two former provide for two or more direct drives and the latter provides for only two. In this respect, the Fiat axle approaches more nearly the Austin device.

In its simplest aspect, the Fiat axle can be described as a pair of concentric driving shafts carrying separate bevel pinions permanently in mesh with separate driven bevels attached to the driven shafts that turn the road wheels.

There are eight claims in all in the original patent specification, and though the action as it stands is intended to cover the whole patent, the chief feature involved in the litigation is the familiar Fiat yoke torque tube construction by means of which the necessity for radius and reach rods is eliminated and which is described in the specifications as follows: " . . . a reach rod casing enclosing said shaft connected at one end to said axle, a yoke rotatably connected to the other end of said casing, means preventing relative longitudinal movement between said casing and said yoke, a horizontal pivotal connection between the ends of said yoke and the frame in the plane of said universal joint."

Franklin also to Discontinue "Fours."

Joining the increasing number of manufacturers who have taken similar action, the H. H. Franklin Mfg. Co., of Syracuse, N. Y., has discontinued the manufacture of four-cylinder cars and will concentrate its efforts entirely on the production of "sixes." First reports stated that only the Franklin "little six" would be continued, but such is not the case, as both the so-called "little" and "big" ones will be produced exactly as heretofore.

Present prices will be maintained, and if any mechanical changes are made they will be of a minor character. At any rate, as the Franklin company abandoned the annual model policy two years ago, if any changes are found advisable they will be made without regard to date and simply in the regular process of manufacture of the machines.

Brooklyn Gills to Make Heavy Trucks.

Having gained much valuable experience in the building of heavy commercial vehicles for the Hewitt Motor Co. prior to the taking over of that company by the International Motor Co., P. M. Gill & Sons, of 2 Lorraine street, Brooklyn, N. Y., are preparing to take up the manufacture of a truck of their own design. For the present, however, experimental work only is being carried on; the actual production of vehicles will not be commenced for six or seven months. The truck to be produced will be a large one—probably between five and ten tons capacity.

"AUTO CENTER" BEGINS TO SHOW SIGNS OF WEARINESS

World's First "Permanent Accessory Exhibition" Takes Down its Flags and Shrivels—"Promised Capital" its Only Hope.

Auto Center, Inc., has hauled down the American flag. The manager of that "automobile department store," or "permanent accessory exhibition," is not yet ready to acknowledge complete defeat; but the fact remains that the American flags, which were the chief adornments of the second floor of the Long Acre Building, at 42d street and Broadway, New York, where the Center established itself in March last, have been furled and what remains of the exhibits have been carried to the third floor, where they are spread in very much contracted space and with no flags gracefully draped above them, and with no signs on the windows to call attention to their location. Despite the contraction, John M. Gorham, who promoted the enterprise and who managed it, still lives in hope.

"If we secure the capital that has been promised," he said only yesterday to a Motor World man, "we will be booming within 30 or 60 days; if it fails us, the outcome is problematical."

Gorham is a cheerful person and, truth to tell, Auto Center has required no small fund of cheerfulness since it first was inaugurated. For not only were exhibits few and far between—approximately, there were only 20—but visitors were almost as few as the exhibits; none of those who had to do with the latter were ever greatly pressed for time.

In February last, when Motor World first and exclusively presented the news that such an enterprise was to be inaugurated, it attracted wide attention, chiefly as an interesting experiment. At that time, Gorham himself stated that not less than 45 accessory manufacturers had contracted for

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space, and as they had been given the privilege of sub-leasing, he estimated that at least 110 different exhibits would be in place before the Center opened for business.

On three separate occasions, when Motor World men visited the establishment to enumerate the exhibitors and their exhibits, Gorham was earnest in his declarations that if the promised descriptions were delayed "a week or two" very many of the delinquents would be "among those present."

Few of them, however, did put in an appearance and Gorham now frankly expresses his disappointment. He offers no explanation as to why about half of those whom he said had contracted for space failed to live up to their contract, but, as stated, he has not entirely despaired and is firm in the belief that if the promised capital is forthcoming "all will be happy yet, you bet."

The Auto Center was incorporated, under the laws of New York, with an authorized capital of $25,000 and, according to information supplied by Gorham at the time, the president of the corporation was William A. Kelsey, of Meriden, Conn., president of the Kelsey Printing Press Co. and of the Meriden Morning Record, and the treasurer was John Stanley, cashier of the First National Bank in Whitestone, L. I.

Prest-O-Lite Checks New Jersey Refillers.

Camille and Ida Bourbonville, of Newark, N. J., trading as the Acetylene Appliance Co., on Monday last, 7th inst., were permanently enjoined by the Federal Court for the District of New Jersey from filling, selling or in any way dealing with tanks bearing Prest-O-Lite trade marks "without in every case permanently removing and obliterating the name Prest-O-Lite."

The action in this case is similar to other suits filed in the New York and other jurisdictions by the Prest-O-Lite Co., but the decree differs from some of the others in that it provides that the injunction shall not become effective if the defendants file a bond in the sum of $3,000 and also pay the plaintiffs all profits which may be derived from the use or sale of Prest-O-Lite tanks.

To Build Truck Bodies in Cleveland.

The Commercial Auto Body & Mfg. Co., of Cleveland, which was incorporated last month with a capital of $50,000, of which F. L. Fuller is president, has just completed the equipment of its plant at 5345 St. Clair avenue, which building previously was occupied by the American Railway Signal Co. The new occupant, as indicated by its title, will make a specialty of building truck bodies.

POPULAR-PRICED "SIX" ADDED TO MARION LINE

Left Drive, Center Control and Other New Features in Car Listing at $2,150—"Four" to Be Continued.

Marking the entry of still another well-known manufacturer into the six-cylinder field, the Marion Motor Car Co., of Indianapolis, Ind., without previous intimation of its intentions, has quietly developed and now has placed on the market a "six," the first, needless to add, that has borne the Marion name-plate; the single four-cylinder model is to be retained and at its original price of $1,475. The price of the new "six" with complete equipment, which means, of course, that it has an electric lighting and engine starting system, is $2,150.

The motor in the new car is of the L-head type with its cylinders cast in sets of three; bore and stroke are 3¾ and 5¼ inches, respectively, the piston displacement therefore being 347.8 cubic inches and the A. L. A. M. rating 33.75 horsepower. Conforming to the growing tendency, the camshaft is driven by "silent" chain and spirally cut gears drive the magneto and pump shafts. The lighting and engine starting equipment bears the Westinghouse trade mark. The steering gear is placed at the left side with the control levers in the center and the seats are upholstered in Turkish fashion. The other essential elements of the car include pressure gasolene feed, full-floating rear axle, two sets of brakes on rear wheels, 124-inch wheelbase and 35 x 4½-inch tires on demountable rims. Equipment includes mohair top with boot and side curtains, rain-vision windshield, Stewart 60-mile speedometer, electric horn under hood, and its Westinghouse electric lighting and engine starting system, in addition to the usual complement of tools, spare parts, etc.

Newark Chooses Officers and Show Dates.

Although it was understood that the promotion and management of the next Newark (N. J.) show would be transferred by the New Jersey Automobile Exhibition Co. to the New Jersey Automobile Trade Association, at the annual meeting of the latter body last week it was decided that it were better that the old order of things be continued. The two organizations are composed largely of the same dealers, but in order to give the Trade association direct representation, Joseph C. Bell and George H. Smith were elected members of the Exhibition company's board of trustees.

The other members of the board are C. Louis Fitzgerald, Walter H. Ellis, J. W. Mason, George Paddock, Inglis M. Uppercu and Horace A. Bonnell. They, in turn, elected officers as follows: C. Louis Fitzgerald, president; George H. Smith, vice-president; H. A. Bonnell, secretary-treasurer. The matter of holding the next show in December was discussed, but in the end it was decided to retain February dates, as usual. Accordingly, the show will open February 21st and close seven days later, February 28th.

To Build Schram Car in Seattle.

For the purpose of building a car designed by A. J. Schram, who at one time built the Sunset car in California, a $500,000 company has been formed in Seattle, Wash., with F. J. Carver, of that city, as president. Schram himself is vice-president, W. R. McClelland treasurer and F. A. Mitchell secretary. It is stated that the car will be built in both four- and six-cylinder types, the former listing at $1,500 and the latter at $2,200.

New Process Rawhide Reduces Capital.

The New Process Rawhide Co. has filed notice of reduction of capital from $40,000 to $10,000. The chief business of the company was taken over in June last by the New Process Gear Corporation, capitalized at $1,000,000, the old company being continued with reduced capital only for the purpose of operating the plant utilized in the preparation of hides and for the purpose of preserving certain property rights.

Hydraulic Drive Due from Wisconsin.

The Beijer Hydraulic Transmission Co., of Stevens Point, Wis., which was recently organized by A. P. Beijer, inventor of a new type of hydraulic drive, has established a small shop in that city, where he is building a number of his transmissions for demonstration purposes. Associated with him in the enterprise is W. E. Atwell, who is secretary and treasurer of the company.

Studebaker Gives Up Sacramento Branch.

The Studebaker Corporation has discontinued its branch and warehouse in Sacramento, Cal. The horse vehicles have been taken over by the Emigh-Winchell-Cline Co., while the Studebaker automobile agency has been acquired by T. B. Richards and Isaac Christie.

Monarch Moves Into Its Factory.

The Monarch Motor Car Co., of which R. C. Hupp recently became president and general manager, has taken possession of the factory building at 1528 Jefferson avenue, East, Detroit; the location is at the corner of Baldwin avenue.

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POPULAR-PRICED ELECTRIC AT LAST IN PLAIN SIGHT

Runabout to Sell for Less Than $1,000 Appears in Toledo—Suggests Gasolene Car Practice in Many Features.

Long expected, the under-$1,000 light electric car is at last in a fair way of becoming available. Backed by Chicago capital, Carl Probst, of Toledo, Ohio, is the man who has performed the development work, his first car having made its appearance on the streets of Toledo during the present week after a considerable period of experimentation.

While the company to manufacture it has not been fully organized, it is known that two electrics will be produced—a runabout listing at less than $1,000 and a coupe at less than $1,300, the same chassis being utilized for both vehicles. They will have a wheelbase of 96 inches ,a tread of 50 inches and 30 x 3½ inch tires, probably on wire wheels. The new cars will also employ full floating rear axle, a double reduction shaft drive and all four springs will be of the Lanchester suspension or cantilever type.

The runabout is equipped with a perfect stream-line bodly, pointed in the front and broad at the rear, being designed to afford minimum air resistance. It will also be distinguished by left-hand control and wheel steer and will easily make 25 miles per hour. The seats are roomy and ample leg room is provided. In general appearance, it somewhat suggests the Grant semi-cycle car, which recently was illustrated in Motor World, but it is larger and, if anything, even better looking.

Big Four Horn Causes Discordant Note.

Differences between H. C. Evelyn, the inventor, and Fleming, the business manager, who comprises the Big Four Horn Co. of Watseka, Ill., have resulted in the filing of a petition asking that the company be dissolved. Evelyn claims not to have been treated fairly, and it is understood to be negotiating with a Chicago manufacturer to take over his patents and other rights.

Will Appeal from Prest-O-Lite Decision.

The Appellate Term of the Supreme Court for New York county this week granted permission to F. Ray, operating as the Smith-Haines company, and to the Brückner Auto Supply Co., both of which are New York supply houses, to appeal to the Appellate Division from the decision in favor of the Prest-O-Lite Co. rendered by the Municipal Court and affirmed June 25th by the Appellate Term. The decision held that the refilling of Prest-O-Lite tanks with other than Prest-O-Lite gas and the sale thereof is grounds for the recovery of a $100 penalty for every offense.

Cadillac Mixed With Caesar and Goby.

Due to the work of a disingenuous advertising writer, the Cadillac Motor Car Co. and some of its agents have been put to the pains of denying that the Cadillac company had, would or might adopt the Goby sleeve valve engine. The d. a. w. evidently considered it a stroke of genius to print in full page form the address, "The Ideal Automobile Plant," delivered by H. M. Leland, of the Cadillac Motor Car Co., at the S. A. E. banquet in Detroit in June last, and then so mixed Leland with Demosthenes, Cicero, Caesar, Napoleon, Dante, Shakespeare, Moliere and the Goby engine that there was no telling exactly what the advertisement meant. There were enough persons, however, who assumed it meant that the Cadillac car of the future would be equipped with the Goby engine to require denials all along the Cadillac line. In response to Motor World's inquiry, the denial from the Cadillac factory was unreserved.

Reo Resumes Payment of Dividends.

Having passed its dividend in October last, the Reo Motor Car Co., of Lansing, Mich., whose shares recently were placed on a 10 per cent. basis, is making good for its lapse. The first quarterly dividend of 2¼ per cent., under the new arrangement, is now being disbursed, accompanied by an extra dividend of the same amount.

Chevrolet Establishes Two Branches.

The Chevrolet Motor Co., of Detroit and Flint, Mich., will this week open a New York branch at 1651 Broadway, New York, and another at 1505 Bedford avenue, Brooklyn. George H. Connor is in charge of the New York establishment, and Warren A. Sellon of the Brooklyn place.

Hexter to Become "Willys Service."

The Hexter Motor Truck Co., of New York, which several months since was acquired by John N. Willys, of Toledo, has been legally authorized to change its name to the Willys Service Corporation. The change, however, will not become effective until August 11th.

Henderson to Sell Treasury Stock.

The Henderson Motor Car Co., of Indianapolis, has voted to sell the unissued stock remaining in its treasury, which amounts to $100,000. It is probable that the shares will be taken up by present stockholders.

COURT ORDERS A ST. LOUIS DEALER TO CUT HIS SALARY

If Halsey Does Not Do So and Fails Also to Return Money to Treasury, Receiver Will Be Appointed.

As a result of proceedings instituted by J. D. P. Lewis, a stockholder, Oscar L. Halsey, president of the Halsey Automobile Co., of St. Louis, Mo., has been ordered by the court to pay $10,000 into the treasury of the company for the benefit of stockholders, and to refund all salary as president in excess of $750 a month received by him since last November; the court also has instructed that a resolution be adopted fixing Halsey's salary at not more than $9,000 a year. In his petition for a receiver, filed in February last, Lewis charged that Halsey had raised his salary from $4,200 to $20,500 per year.

If the court's order is complied with in 30 days, the suit will be dismissed. Otherwise, a receiver shall be appointed to take charge of the company and to recover from Halsey the sums specified in the decree.

The $10,000 which Halsey is directed to pay to the company, represents what Halsey saved himself in a deal when he sold to the Halsey company property at Twenty-second and Locust street, which a realty company, of which he was the principal owner, got in a trade for property at Euclid and Maryland avenues. Lewis alleged the Halsey company paid too much for the Locust street property.

The Halsey company handles the Packard car in St. Louis, and in his petition the stockholder charged that Halsey had formed a separate company to sell Cadillacs.

Ford Redenies 3-for-$1,000 Rumor.

Although it was officially denied some two months ago, and despite its ridiculousness, the old rumor persists that the Ford Motor Co. purposes marketing its enormous output direct to owners and on what may be termed an apple-and-orange basis—that is, three cars for $1,000. None knows where the silly report originated, but it is still encountered in many unexpected places and has been swallowed without salt by many otherwise intelligent persons.

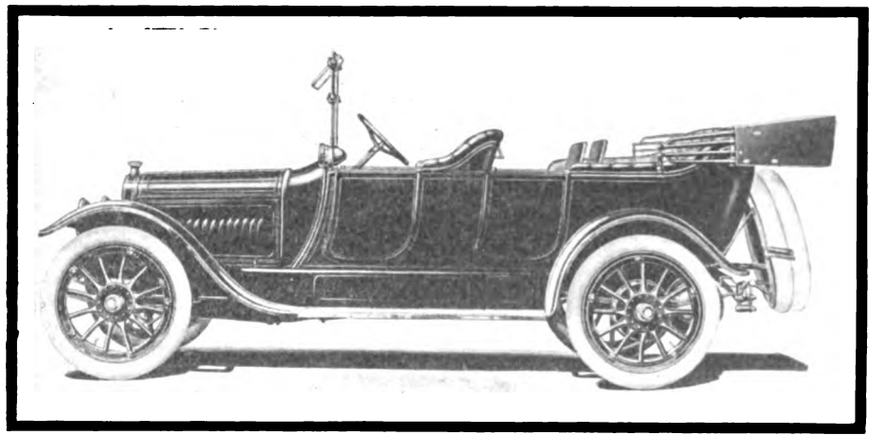
While scarcely necessary, the Ford company has again repudiated the story and, apart from the absurdity of a big company marketing an enormous product on the so-called club plan, it requires little figuring to make clear to any tradesman that the marketing of the Ford car, or any other real car, at any price approximating $333.33 1/3 is an utter impossibility.

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LOZIER RE-EMBRACES "FOUR" AND LOPS OFF "BIG SIX"

New Model Lists at $2,100 and, With "Light Six," Will Constitute Line —Unusually Long Stroke Motor Employed.

After having confined his activities to the production of "sixes" exclusively for the past few years—a "big six" and, later, a "light six" which in the time it has been on the market has proven so popular that the construction of the larger car is to be discontinued—the Lozier Motor Co., of Detroit, Mich., has restored a part of its affection to its first love, so to speak, and for the season commencing January 1st, 1914, will market a medium-priced "four" to sell



NEW LOZIER FOUR-CYLINDER MODEL WHICH LISTS AT $2,100

for $2,100; the "light six" is to be continued at its original price of $3,250. That the action of the Lozier company in bringing out a four-cylinder model in the face of such steady increase in the production of "sixes" and when nearly every other manufacturer is bringing out new six-cylinder models, has caused a mild sort of a sensation in trade circles goes without saying; the reason for the unexpected innovation is put down as an unfilled demand for a high-class "four" listing at a moderate price, and it is proposed to fill this demand with the new Lozier "four."

In appearance, the new "four" will be almost exactly like the "light six" and will be driven from the left side with the control levers in the center. The motor is of the L-head type, with cylinders measuring 4½ x 6½ and such well-known features of Lozier construction as force-feed lubrication and "silent" chain camshaft drive are retained. A Bosch dual ignition system furnishes sparks, and cooling is by pump-circulated water. A complete Gray & Davis electric lighting and engine starting system is part of the equipment. Transmission elements consist of the usual oil-bath multiple disk clutch and three-speed selectively operated gearset. The wheelbase of the new car is 120 inches on 36-inch wheels shod with 4½-inch tires on demountable rims. Standard equipment includes top, built-in windshield, speedometer, extra rim and tire carriers.

Three Cars in Partin-Palmer Line.

In addition to the 38-horsepower six-passenger Partin-Palmer car, which will be made by the Palmer Motor Car Co., of Detroit, and marketed by the Partin Mfg. Co., of Chicago, as stated in Motor World of June 5th, there also will be manufactured and marketed by the respective parties the Crown cyclecar and the Partin "45," also a six-passenger touring car.

The Partin-Palmer "38" will utilize a Mason motor and will have a wheelbase of 115 inches and be marked by center control with left-hand drive; it will list at $975. The Partin "45," which will mount a 45-horsepower Rutenber motor, will have a wheelbase of 120 inches and will sell, fully equipped, including an electric lighting and starting system, for $1,275. The Crown cyclecar will have a four-cylinder 21-horsepower motor and will sell for $385.

The sales department of the Partin Mfg. Co. will be directed by C. C. Darnell, who is well known in the West and who until recently was sales manager of the Crow Motor Car Co., of Elkhart, Ind. The Partin Mfg. Co. itself is a partnership composed of George H. Partin and H. F. Graper, both of whom are Tennessee men of ample means.

Rauch & Lang Undertake Enlargement.

The Rauch & Lang Carriage Co., makers of the R. & L. electric, have commenced work on the enlargement of their factory in Cleveland. The addition will be a brick and steel structure, 112 x 199 feet, which will afford 78,000 square feet of additional floor space.

PROMINENT MEN IN TRADE WHO ASSUME NEW DUTIES

Resignations and Promotions That Serve to Place Many Workers in New Places—Few Leave the Industry.

Joseph M. Everett has been appointed manager of the Dayton Tire Co., of Boston. Previously he was manager of the Walpole branch in that city.

J. W. Willcox, who has handled Henderson cars in Los Angeles, has left the retail trade to become district manager in Southern California for the Henderson Motor Car Co. Temporarily he will make his headquarters at 1053 South Olive street, in Los Angeles.

F. Hughes Moyr, former chief engineer of the Firestone rim plant in Akron, Ohio, has been appointed chief engineer of the General Rim Co. While maintaining an executive office in New York, the latter has transferred its headquarters and manufacturing operation to Cleveland, Ohio, where Moyer will be stationed.

G. R. Wadsworth, for three years engineering manager of the Peerless Motor Car Co., of Cleveland, has resigned that office to become associated with Gray & Davis, of Boston. As the Peerless people were the first to embrace the Gray & Davis lighting and starting system, it goes without saying that Wadsworth is thoroughly familiar with it.

R. H. Losey, who about a year since became sales manager for the Republic Motor Co., one of W. C. Durant's enterprices, has returned to Indiana, whence he came. Before joining the Republic staff he was manager of the Buick branch in Indianapolis, but he now has been appointed sales manager of the Westcott Motor Car Co., of Richmond, Ind.

Hard to Get Even Sample Wire Wheels.

However opinions may differ regarding wire wheels, there is no doubting the position of the McCue Co., of Buffalo, N. Y. W. F. Evans, its general manager, stated to a Motor World man one day this week that so great is the demand that, while the company is making deliveries according to contract, it is not able to deliver even a sample set of wire wheels in less than three weeks time. At least a measure of relief, however, is contained in the addition to the McCue plant, which it is expected will be completed in about three weeks and which will afford 36,000 square feet of additional floor space. This will permit the plant to attain a capacity of about 1,000 wheels per day.

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The Week's Incorporations

Chicago, Ill.—Pneumatic Gearshift Co., under Illinois laws; authorized capital, $25,000. Corporators—G. W. Killelea, E. O. Loewen, D. Krinsky.

Bowling Green, Ohio—Modern Motor Car Co., under Ohio laws; authorized capital, $10,000. Corporators—W. P. Abbey, Dale I. Ladd, R. E. Ladd.

Milwaukee, Wis.—Hoppe-Hatte Motor Co., under Wisconsin laws; authorized capital, $15,000. Corporators—A. C. Hoppe, G. R. Hoffman, L. M. Noah.

Raymond, Wash.—East Side Auto Stage Co., under Washington laws; authorized capital, $12,000. Corporators—W. J. Trimble, L. B. Johns and others.

Detroit, Mich. — Overland-Detroit Co., under Michigan laws; authorized capital, $10,000; to deal in motor cars. Corporators—Charles E. Baker, S. C. Fisk.

Wilmington, Del.—Brookes Motor Car Co., under Delaware laws; authorized capital, $5,000,000; Corporators—Charles B. Bishop, Clarence J. Jacobs, Harry W. Davis, all of Wilmington.

Cincinnati, Ohio—Commercial Motor Car Co., under Ohio laws; authorized capital, $50,000. Corporators—Walter G. Vessler, H. A. Hoelscher, E. H. Hoelscher, W. C. Hoelscher, George Schorr.

Wilmington, Del.—The Tire Place, under Delaware laws; authorized capital, $100,000. Corporators—J. G. Hughes, Haddonfield, N. J.; H. Fischer, Philadelphia, Pa.; H. W. Davis, Wilmington.

Dayton, Ohio—Dayton Buick Co., under Ohio laws; authorized capital, $10,000; to deal in motor cars. Corporators—L. J. Haughey, Charles Abel, Joseph A. McKenny, Earl Simon, A. J. Smith.

Great Neck Station, N. Y.—Charles W. Smith Taxicab, Inc., under New York laws; authorized capital, $2,000. Corporators—Charles W. Smith, Eleanor C. Smith and James G. Ketcham, all of Great Neck Station.

Wilmington, Del. — International Metal Wheel & Supply Co., under Delaware laws; authorized capital, $100,000. Corporators—W. H. Dean, Newark, N. J.; E. C. Jackson, Wilmington; W. H. Cooper, Jr., Newcastle.

New York, N. Y.—Standard Purchasing Co., Inc., of Manhattan, under New York laws; authorized capital, $10,000. Corporators—Harry I. Cook, 99 Macon street, Brooklyn; Harry F. Dexter and William H. Brooks, both of Tom's River, N. J.

Georgetown, Del.—Georgetown Garage & Supply Co., under Delaware laws; authorized capital, $10,000; to deal in motor vehicles and conduct a garage. Corporators—Linford P. Faucett, James W. Faucett, Elijah W. White, all of Georgetown.

Chicago, Ill.—Sure Shot Automatic Puncture Proof Co., under Illinois laws; authorized capital, $10,000; to manufacture and sell liquid or semi-liquid paste for stopping punctures. Corporators—A. C. Allan, D. J. Heaphey, Barney Coffey, all of Chicago.

New York, N. Y.—G. B. Sales Corporation, under New York laws; authorized capital, $5,000; to deal in motor car accessories. Corporators—Edward E. Reardon, 246 East 49th street; Francis J. O'Grady, 581 East 168th street; Irving V. W. Williams, 661 Madison avenue.

Minor Business Troubles.

George H. Platt, a garage keeper at 367 Fairfield avenue, Bridgeport, Conn., has filed a petition in bankruptcy. He schedules liabilities amounting to $2,381 and assets to the value of $469.

The Taxi-Motor Cab Co., of Boston, against which an involuntary petition in bankruptcy was filed several months since, last week entered a formal denial of the allegations of insolvency made by the creditors. The case was sent to a referee, who will delve deeper into the company's affairs in an effort to discover the facts.

Because he failed to carry out the provisions of his lease, Samuel Simon, who operates as the Motor Renting Co., which was petitioned into the hands of a receiver in November, 1912, and the Cathedral Park Garage, of 145 West 110th street, New York City, has been adjudged insolvent by the Supreme Court for New York county and on the petition of the Autocar Co., of Ardmore, Pa., their affairs have been placed in the hands of Charles C. Campbell as receiver. According to the bill of complaint, the Autocar company holds the lease on the property occupied by Simon as the Cathedral Park Garage, for which it was to have received $100 monthly rental from October 1st, 1912, to May 1st, 1913, when a final payment of $31,886.14 fell due, but as none of these payments had been made, action to foreclose the mortgage was instituted, which resulted in the appointment of the receiver. Simon entered no defense.

Phoenix Tractor Going to Kansas City.

The American Gas Engine Co., Kansas City, Mo., which succeeded the Sheffield Gas Power Co., has purchased the plant and business of the Phoenix Tractor Co., of Winona, Minn.; it is understood that the equipment of the latter will be removed to Kansas City, where the manufacture of the Phoenix tractor will be carried on on a much larger scale.

Goodyear Develops Tire for Electrics.

The Goodyear Power Saver pneumatic tire is the style of a new tire which just has been placed on the market by the Goodyear Tire & Rubber Co., of Akron, Ohio. It is designed especially for use on electric cars and is a moulded tire of lighter construction than the older models.

More Taxicabs for Indianapolis.

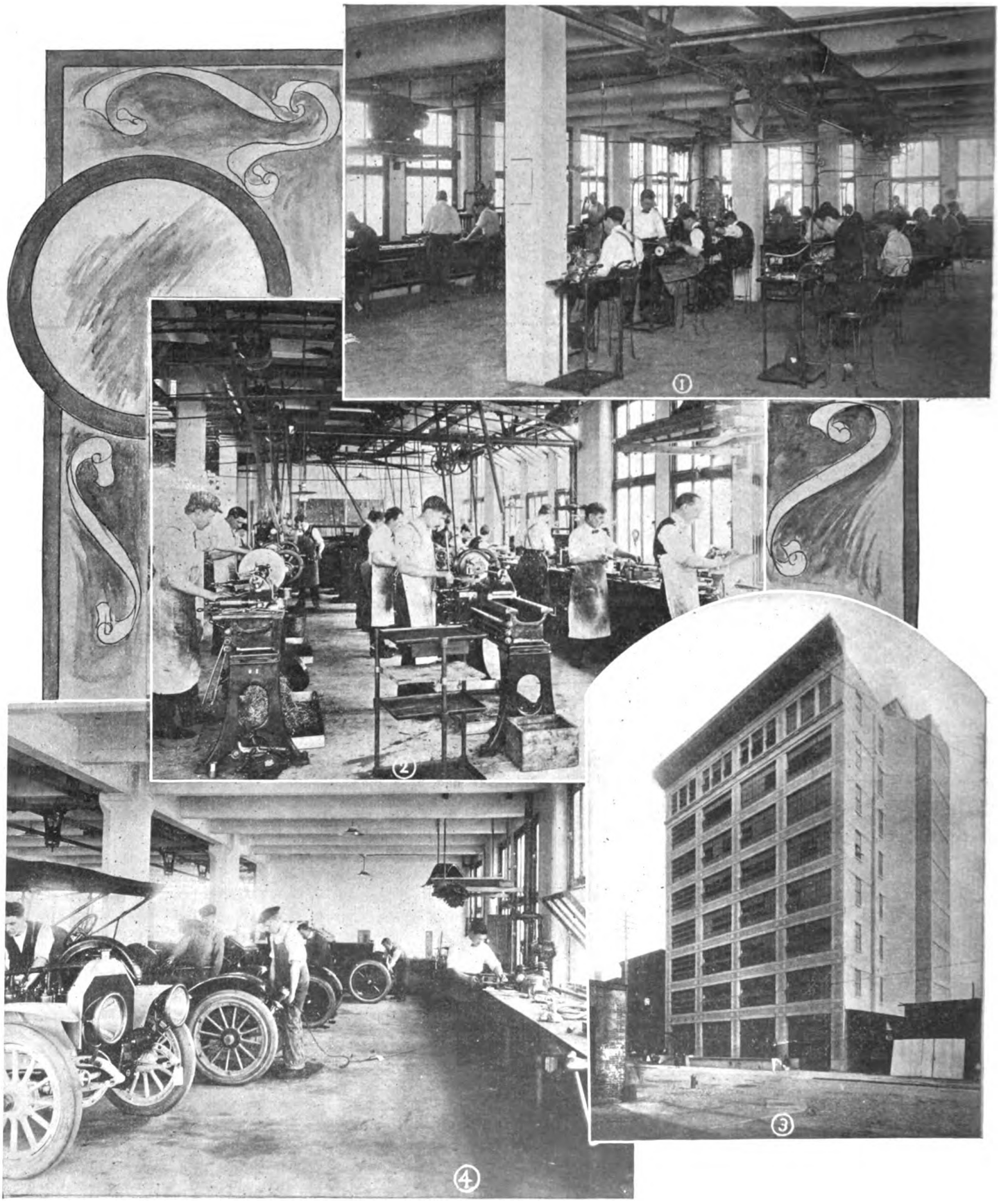
The Severin Taxicab & Garage Co., with a capitalization of $100,000, is in process of formation in Indianapolis, Ind. The promoters are Harry G. Gates, Richard H. McClellan, Charles A. Bookwalter, Frank H. George and Cassius C. Hadley. The company is the outgrowth of the desire of some of the members of the Severin Hotel Co. to have an up-to-date taxicab service connected with that establishment; the business, however, will be more comprehensive, and a garage will be erected near the hotel with a storage space for 100 cars. Twenty-five taxicabs will be operated.

Warren Property Returned to Receiver.

Because of the legal knots which developed afterthe Warren Motor Car Co.'s plant in Detroit had been sold by the receiver to W. C. Rands, of the Rands Mfg. Co., which were sufficient to cause the court to withhold its approval, the property has been turned back to the receiver, the Detroit Trust Co., and is now in its hands. It probably will again be offered at public sale but this is not likely to occur for five weeks or more.

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WHERE THE HARTFORD ELECTRIC LIGHTING AND STARTING SYSTEMS ARE PRODUCED



HARTFORD SUSPENSION CO.'S NEW PLANT IN JERSEY CITY, DEVOTED WHOLLY TO STARTERS AND LIGHTERS

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In the RETAIL WORLD

M Bower is building a garage in Bayard, Iowa.

F B. Moore, of Tulare, Cal., will open a garage on Kern street.

Smith & Ramsey, of Van Wert, Iowa, are erecting a new garage.

J F Houchins, of Hallettsville, Tex., is having a new garage erected.

A. O. Merrill is erecting a one-story garage, 48 x 50 feet, in Flaxton, N. D.

Clifford Bevington has opened a garage in Richmond, Ind., on North 8th street.

The Bellaire (W. Va.) Automobile Association has completed a new garage.

Yaeger Hill, of Smithville, Tex. has awarded the contract for a new garage.

Nathan Haywood, of St. David's, Pa., has commenced the erection of a new garage.

The Maroa Mfg. Co., of Bloomington, Ill., plans to open an automobile repair-shop.

Frank Crawford, of Omaha, Neb., is about to erect a garage on Farnam street.

The Wilmington (Del.) Automobile Co. will erect a new garage. It will cost $4,000.

F J. Haney is about to erect a garage in Evansville, Ind. The site is on upper First street.

Hannan & Henry have opened a garage in Plattsburg, N. Y. It stands on Margaret street.

C H. Nelson has opened a garage in Pittsfield, Ill. He also has an automobile agency.

Edmund Batson, of St. John, N. B., has secured plans for a garage; he will build on Duke street.

Dorsey & Holland have entered the trade in McRae, Ga. Their establisment is styled City Garage.

The Campbell Machine Co., of San Diego, Cal., is building a new garage on Cedar street.

Benjamin Colton, of Osage, Ia., is about to erect a garage; he will build at 8th and Main streets.

Herman Ahlers, of Brooklyn, N. Y., plans to erect a garage at 210 Lewis avenue; it will cost $8,000.

Frank Eberley heads a company which plans to erect a garage, 50 x 130 feet, in Wahpeton, N. D.

William H. Parkinson, of Waltham, Mass., has opened a garage; it is located on Lexington street.

G. S. Schrim, of Pasadena, Cal., has awarded the contracts for a new garage on Huntington drive.

The Union Motor Car Co., of Tacoma, Wash., has opened a new garage. It stands at 808-810 A street.

T. J. Wilson, of Ocean Beach, Cal., has taken over a garage in San Diego; it is located on First street.

R. Foster Bray, of Bangor, Me., has taken over the garage of S. E. Teel; it is located on North First street.

Henry Sisson and Fred Brown, of Lake George, N. Y., have formed a partnership and will operate a garage.

The Alameda (Cal.) Vulcanizing Works has opened a repair and vulcanizing works; the location is on Oak street.

I W. Phillips has entered the trade in Orlando, Fla. He has purchased and will operate a garage on Pine street.

Arthur R. Norton will erect a garage and repair-shop in Farmington, Me. He has purchased a site on Main street.

H. A. Dyckman, of Stamford, N. Y., is erecting a new garage; it will stand at the rear of the Van Winkle Theater.

William Elerbeck, of Beatrice, Neb., has disposed of his automobile and implement business to Foster & Langworthy.

A stone, fireproof garage is to be constructed in Wynnewood, Pa., for Charles Watkins. The cost will be $5,000.

The Bertram Motor Supply Co., of Salt Lake City, is preparing to open a branch at 224 South Main street, Butte, Mont.

Charles L. Rochelle, of Derry, N. H., a cigar manufacturer, has branched out; he has taken the agency for Metz cars.

Ray Cleveland, of Albany, Minn., has disposed of his livery business to C. B. Quale. Cleveland retains his automobile agency.

L. L. Tyler is about to erect a garage in Yankton, N. D. He is Reo and Ford dealer. The garage will stand on Douglas avenue.

A new garage is to replace the one now occupied in Hillsdale, Mich., by J. Lewis, on Railroad street. The building will cost $3,000.

W. T. Bender and F. T. Moore have opened a new garage in Visalia, Cal. It stands on E street and is styled the B. & M. Garage.

Charles Hellie and Louis Henderson, of Albert Lea, Minn., have opened a garage. It is located at Washington and main streets.

The Buick Motor Co., of Brooklyn, N. Y., has opened new salesrooms at 358 Livingston street; the service station remains at 475 Hudson avenue.

John Dunlap has opened a garage in Dallas, Tex., on Holmes street, between Grand and Sanger avenues; free air is a feature of his service.

H. H. Moody, of Peoria, Ill., has secured plans for a three-story brick sales building, to stand on Main street. It will represent an expenditure of $8,000.

Plans have been prepared for a three-story garage to be erected in Montgomery, Ala., for Cook & Laurie. It will be of steel and frame construction.

Brown & Bosworth, of Lewiston, Me., have leased the Ferguson Livery Stable and will convert it into a garage; a full machine shop equipment will be installed.

W. D. and Logan Smiley, of Ladysmith, Wis., plan to open a garage and repair-shop on Miner avenue. They are having a building remodeled for this purpose.

John Christenson & Co., automobile and motorcycle dealers in Galveston, Tex., plan the erection of a 12-story building on Tremont street. It will cost $750,000.

The F. G Maas Co., of Clinton, Iowa, is about to open a new place of business at Sixth avenue and Second street; the company is a garage operator and dealer.

G. H. Obermeyer, a garage man in Duluth, Minn., has become a dealer; he has secured the Cartercar agency and will handle it from his garage on Second avenue, West.

L. C. Merchant and others, of San Antonio, Tex., are about to enter the trade in Bishop, in the same state; a building is being erected on Fourth avenue, in which they will open a garage.

Bunker & Reopell, of Springfield, Mass., who handle Little cars, have taken possession of a new garage and sales building on upper State street. They formerly were located on Port street.

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Charles R. Johnson, formerly with the Bates-Odenbrett Automobile Co. of Milwaukee, Wis., has entered the trade for himself; he has the White line.

The firm Paquet & Pack, of Portland, Ore., has been dissolved. J. A. Paquet, however, will remain in the automobile business, acting as distributer for Oregon of the Haynes line.

Frank Fleming, formerly with an express company in Salina, Kan., has entered the automobile trade on his own account. He has opened a garage and repair-shop in Rosedale, in the same State.

George P. Sweet has purchased the Orleans Motor Car Co., in Beaumont, Tex. He formerly operated the Beaumont Motor Car Co. Besides storing and repairing cars he will carry a full line of accessories.

A. Hammer, who has been engaged in repair work in a small way in Modesto, Cal., is to have a real repair-shop, 50x50 feet; a sheet iron structure is being erected for him on 13th street, between H and I streets.

Guy L. Smith, of Omaha, Neb., is soon to occupy a new fireproof building of three stories and basement at 26th and Farnam streets; the building is 66x132 feet, with a total floor space of 35,500 feet. Smith is a Franklin dealer.

Walter W. Stryker, former manager of the Service Motor Car Co.'s branch in Plainfield, N. J., has taken over that establishment and hereafter will conduct it under the style Stryker Motor Car Co. Overland and Abbott-Detroit cars will be handled.

Joseph Atherton has disposed of the M. & A. Garage, in Macomb, Ill., to D. F. Pierce; Atherton and John McDonald started the business a year ago and later took over the Stocker Garage, where the business since has been conducted. Atherton recently bought out his partner.

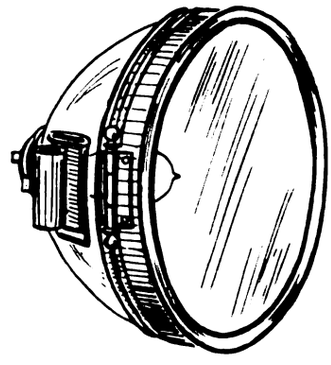
L. K. Bronson, secretary of the Oshkosh (Wis.) Chamber of Commerce, has resigned that office to engage in the automobile business in that city. He has acquired an interest in the Philip W. Stocum establishment at 43 Cheape street, which hereafter will be conducted under the style Stocum-Bronson Auto Co.

The Knickbocker Garage, 150 x 66 feet, has been opened in Binghamton, N. Y., at Wall and Henry streets. The equipment includes an air compressor and tank, two wash racks in the basement, with a 300-gallon hot water tank, and curb air and fuel connections. The space will accommodate 76 cars. The garage utilizes the ground floor and basement of a new $50,000 three-story structure, of which the second floor is to be a skating rink and the third a convention hall. Knickerbocker, the owner of the business, is a Henderson dealer.

RADICAL IDEA IN LAMPS; HERE'S ONE ALL GLASS

Vacuum Bottle Construction Prevents Heat Radiation—Transparent Protection for Colors—Stand Up Well Under Vibration.

At the present moment there is uncommon activity in the world of lamps, and it would seem that every fault that a lamp ever had has been seized upon and either eliminated or mitigated in some form or other of lighting device. But while all sorts of ingenious ideas have been put into material form, and various materials have been pressed into the service, the Reynolds-Browne Co., of 1722 National Bank Building, Chicago, has capped the climax by bringing out a lamp that has a body made



ARBECO GLASS LAMP

wholly of glass, to say nothing of the glass parabolic reflector, and is made on the principle of the vacuum bottle in that there is a vacuum between the reflector and the lamp body.

The general appearance of the lamp is that of an up-to-date affair of the bullet type. The glass body is finished, on the inner surface, in any color desired, which may be the color of the car or brass, gold, nickel, copper, etc. Obviously the finish is protected and cannot dull or tarnish, so that wiping off the outside with a damp cloth is all that is necessary to keep the lamp looking its best. The reflector is a truly molded parabola with the silvering on the outside—that is, the surface furthest from the bulb—and is as easily cleaned as the body. A hose can be turned on the lamp without injuring it.

In the space that is left between the reflector and the body, which are connected in the same general way as the two parts of a vacuum bottle, there is a vacuum which serves more than one purpose. It preserves the finish of the body and the silvering of the reflector indefinitely, and it prevents the interior of the lamp from heating under the rays of the sun and the exterior from becoming hot from the radiated heat of the electric bulb which is the source of illumination.

While it might be assumed offhand that a glass lamp would be easily broken, the manufacturers state that tests made on cars running under all sorts of conditions, including rough, bumpy roads, indicate that there is no fear of breakage from vibration. The "Arbeco" lamps, as they are called, weigh from one to three pounds less than metal lamps.

Apple Claims First Two-in-One Lamp.

"In Motor World of July 3rd we note an editorial regarding the doing away with side lights, and adopting the method of dimming the headlights so that the one lamp answers the purpose of two," writes the Apple Electric Co., of Dayton, Ohio. "In this connection it might be interesting to you to know that the Apple Electric Company were the first to bring out this feature in January, 1910. In our bulletin No. 14 of that date a price was quoted for adding this feature to electric headlights. The plan was to place a small lamp at the outer edge of the reflector so that it would be out of focus, and a single turn of the switch would shut off the larger lamp in the back of the reflector and switch on the smaller one in front.

"This feature has been later covered by the dimming of the headlights accomplished through the Aplco controller. A feature which does not seem to have been entirely covered in Motor World's editorial, is that in case of the burning out of the regular lamp bulbs in the headlights, the small bulbs could still be used, which would protect the owner against arrest on account of not having the lamps lighted. This, of course, would only apply in case the two bulb headlights were adopted in place of the sidelights."

Glaring Head-Lamps Banned in Chicago.

Chicago is not as bright as it was a week ago. For on Thursday last an ordinance banning glaring head-lamps went into effect and those who use them now are liable to arrest and upon conviction to a fine of from $5 to $50 for every offence. According to the ordinance, which is similar to one in force in New York City and in other large municipalities, "it shall be unlawful . . . within the city limits to use any acetylene, electric or other bright headlight, or any headlight the rays from which shall be intensified by any parabolic or condensing lens in front of the light, unless such headlight shall be properly shaded, so as not to blind or dazzle other users of the highway or make it difficult or unsafe for them to ride, drive or walk thereon."

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A. B. SWETLAND, President and General Manager
F. V. CLARK, Business Manager.

EDITORIAL DEPARTMENT
R. G. BETTS, Managing Editor
S. P. McMINN HOWARD GREENE
R. W. SHERMAN

ADVERTISING DEPARTMENT
BROCK MATHEWSON, Manager
New York Office
1600 Broadway
HOWARD L. SPOHN LOUIS R. SMITH O. H. ADAMS

Western Office
1001 Ford Bldg., Detroit, Mich
W. H. TRIPP, Mgr.

Detroit
1001 Ford Bldg.
MAXTON R. DAVIES

Cleveland
610 Superior Ave. East
C. H. HANDERSON

Chicago
Room 510 Harvester Building
606 South Michigan Avenue
T. E. BULLION

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THE TWO TYPES OF GARAGES.

It is at this season of each successive year that garages automatically divide themselves into two classes—those that treat transients fairly and those that treat them the other way. The touring season is at its height, which means that the transient is very numerously abroad in the land. The unfair class of garageman looks upon him as legitimate prey; he reckons that he will never see him again and acts accordingly.

In many instances, the unfair treatment takes the form of petty overcharges; in others, slop work; in some cases, both. Slop work usually consists in giving the tourist's car the proverbial "lick and promise" instead of proper washing and polishing. The overcharging is usually practiced in the sale of oil or accessories. If the tourist protests, the over-shrewd garageman has ready a mouthful of excuses, which he terms explanations, though he as often sticks his tongue in his cheek after uttering them.

This sort of garageman is the sort that does not look beyond the moment; he is simply "after all the money that's floating 'round" and gets it, no matter how. It is rare indeed that he is pleasantly remembered or favorably recommended by the transient who falls into his clutches. It is almost unbelievable, but it is a fact, that one garageman in this class once used a feather duster on a tourist's car, and when complaint was made at its condition, offered all manner of "apology" for his help—but he charged for washing, just the same.

The other sort of garageman not only values his own reputation but realizes the value of a traveler's good-will; he treats the tourist as he would treat a regular customer. If fault is found and complaint made, he does not have recourse to excuses or apologies. He either has the work properly done or he refunds the money. He is reasonably certain that when the tourist leaves his premises he will return if ever he is in the vicinity, or, if not, that his, the garageman's, name and fair treatment is sure to be remembered and remarked wherever tourists may congregate. This sort of garageman, like the better class of hotel keeper, realizes keenly the far-reaching nature of verbal advertising given by satisfied customers.

Occasionally the unfair treatment is accorded by subordinates, and without the knowledge of the garage owner himself. The result, however, is the same. It will profit not a few garagemen to keep their eyes open or make inquiry, or otherwise discover, how tourists are treated in their particular establishments. For their treatment often is a very essential factor in the success of a garage.

HAS THE EPIDEMIC ABATED?

It has been said that of the organization of automobile companies there is no end, and certainly the weekly record of incorporations for practically a decade has served to make appear that there is truth in the saying. For years it has been a poor week when charters for approximately 100 automobile enterprises have not been issued, even if many of them never reached beyond the "paper" stage; no other industry has been able to compare even mildly with the automobile trade in this respect. It may be the effects of the heated term or may imply that the epidemic for such enterprises has abated, or, possibly, it contains no significance, but it is nevertheless so remarkable as to merit comment that during the last month the record of automobile incorporations has fallen off in a manner that is not short of astounding. The lawyers, at least, must be feeling the pinch.

It would be interesting to discover how the average Secretary of State busied himself before automobile registration bureaus were created and attached to his office. Whatever they may have done, it is certain that the public rarely heard of either the men or their work. Nowadays, however, with an automobile bureau under his wing, he is a poor Secretary of State who cannot interview himself, or have himself interviewed, at least once a week, on the subject of automobile regulation, and thus keep himself in the limelight. In this respect, the automobile has been almost a godsend to many otherwise obscure or sadly neglected "statesmen."

They certainly do run real road races on the Pacific Coast. The Vanderbilt, Grand Prize, Elgin and other so-called "classics" are parlor affairs compared with the Los Angeles-Phoenix and Los Angeles-Sacramento events.

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COOPER TAKES LION'S SHARE AT TACOMA'S BIG CARNIVAL

Stutz Pilot Accounts for the Two Long Races, Averaging Sixty-eight Miles per Hour — Burman Goes into Ditch.

Earl Cooper, in a Stutz car, gathered most of the laurels that were gatherable at the two-day speed carnival which was run in connection with the Montamara Festo, or "Feast of the Mountain," carnival at Tacoma, Wash., on Saturday, July 5th, and Monday, July 7th. Cooper not only won the feature event of the first day— a 200-mile Potlatch trophy race for cars under 600 cubic inches, which netted him $1,800 in cold cash, but he also won the big race of the meet, the 250-mile free-for-all which was to have been run on Sunday, July 6th, but which was postponed to the following day because of inclement weather.

The latter event, styled the Montmarathon, brought the victor $2,500. The lesser contest, termed the Intercity Century, went, as its designation implies, for 100 miles and proved a victory for Parsons, who also drove a Stutz.

The weather on the first day of the meet left very much to be desired. While it did not rain continually, the several short but severe showers rendered "sloppy" the 3½-mile circuit, which was laid out on the prairie on the outskirts of Tacoma. The wetness, however, though it tried the skill of the drivers and limited the speed of the machines, failed to dampen the spirits of the very many spectators who lined the course.

The Intercity Century was the curtain raiser and was run on Saturday morning. The contest was given a true Northwestern flavor by virtue of the fact that the entries were limited to those who had resided either in Washington, Oregon, Idaho, Montana, British Columbia or Alberta for at least three months prior to July 4th. But eight lined up for the start. Parsons completed the distance in 1:33:53, and was followed home by Cameron, also in a Stutz, who finished nearly three minutes later. Houson (Hudson) and Lebold (Buick) took third and fourth places, respectively, the other four contenders having been put out of the running.

The double century for cars under 600 cubic inches occupied Saturday afternoon. Seven lined up for the start of this contest, and of the number four failed to cross the finish line. Cooper early took the lead, but Burman in the Keeton made the keeping of it a pretty problem. For the first 26 laps it was a case of see-saw between the Stutz pilot and the driver of the Keeton. On the 26th lap, however, Burman came off second best in a brush when challenged by Teddy Tetzlaff in a Fiat and went into the ditch. He lost but little time in effecting necessary repairs and finished the race on three cylinders, but the accident lost him even a fighting chance for first money. Cooper crossed the tape in 2:49:32, and Burman limped into second place in 3:05:40. Latta (Interstate) was the only other contender to finish.

The course was in better condition for the Montamarathon free-for-all on Monday. Eleven contenders started in the grind, and of the number but three finished, although three were still running when the race was called. Cooper made the distance in 3:32:08, or at an average rate of 68:4 miles an hour for the 250 miles. Second in was Lewis in a Fiat, who crossed the tape slightly less than three minutes after the winner. Third place went to Hughes (Tulsa); his time was 3:39:55. Endicott (Endicott special), Hanson (Hudson special) and Nichols (Apperson) were flagged while on the 56th lap.

Both Cooper's Stutz and Lewis's Fiat were equipped with Bosch magnetos and plugs, while the Tulsa was sparked by a Bosch magneto. The Endicott special was Remy equipped, with Bosch plugs in the cylinders. The summary:

Saturday, July 5th.

102.1 miles, Intercity Century, for cars under 450 cubic inches—Won by Parsons (Stutz); time, 1:33:53; second, Cameron (Stutz); time, 1:36:36⅘; third, Hanson (Hudson); time, 1:51:16; fourth, Lebold (Buick); time, 2:12:59⅗.

200 miles, Potlatch trophy, for cars under 600 cubic inches—Won by Cooper (Stutz); time, 2:49:32; second, Burman (Keeton); time, 3:05:40; third, Latta (Interstate); time, 3:10:28.

Monday, July 7th.

250 miles, Montamarathon, free-for-all—Won by Cooper (Stutz); time, 3:32:08; second, Lewis (Fiat); time, 3:35:00⅕; third, Hughes (Tulsa); time, 3:30:55. Endicott (Endicott special), Hanson (Hudson special) and Nichols (Apperson) flagged on 56th lap.

Here's Well-Tarred Yarn from Abroad.

A foreign genius who "has it in" for the people who spread tar on the roads with a view to their improvement has — so the story runs—fitted scrapers to each wheel, which catch the tar that sticks to the tires and drops it into tanks, whence it is removed, and—climax—the genius expects to distil the stuff and make motor spirit out of it, with which to drive the car to gather more tar to make more spirit, to drive the car, etc.



*Indicates Sanction by A. A. A.

July 11, Minneapolis, Minn.—Start of the American Automobile Association's national reliability tour.

July 12, Lincoln, Neb.—Track racemeet under auspices of J. Alex. Sloan.

July 12-13, Seattle, Wash.—Track racemeet under auspices of E. A. Moross.

July 17, St. Joseph, Mo.—Track racemeet under auspices of J. Alex. Sloan.

July 18-19, Peoria, Ill.—Automobile Club of Peorias' track racemeet.

July 20, Tulsa, Ariz.—Tulsa Automobile Club's track racemeet.

July 21-25, Grand Rapids, Mich.—Grand Rapids Automobile Club's reliability tour.

July 26, Orangeburg, N. Y.—Rockland County Fair Association's track racemeet.

July 26-31, San Antonio, Tex.—San Antonio Automobile Club's reliability tour.*

July 28-29-30, Galveston, Tex.—Galveston Auto Club's beach racemeet.

July 29-31, Lincoln, Neb.—Lincoln Automobile Club's reliability tour.

Aug. 9, Santa Monica, Cal.—Santa Monica Road Race Committee's road races.

August 18-22, Milwaukee, Wis.—Wisconsin State Automobile Association's fourth annual reliability tour.

August 12, Kansas City, Mo.—Kansas State Automobile Association's reliability tour.

August 29, 30, Chicago, Ill.—Elgin Road Race Association's road races.

August 30-September 6, Chicago, Ill.—Reliability tour of the Chicago Motor Club.

Sept. 1, Columbus, Ohio—Columbus Automobile Club's track racemeet.

Sept. 9, Corona, Cal.—Speedway track races.

Sept. 12, Youngstown, Ohio — Canfield Fair Association's track racemeet.

Sept. 13, Covington, Ky.—Cincinnati Automobile Club's track racemeet.*

Sept. 20-21, Detroit, Mich.—Track racemeet under auspices of Michigan State Fair.

October 4-11, Chicago, Ill.—Chicago Motor Club's Around Lake Michigan reliability tour.

Oct. 10-17, Paris, France—Annual automobile salon.

Nov. 6, Phoenix, Ariz.—Track racemeet under auspices of State Fair Association.

November 24, Savannah, Ga.—Vanderbilt Cup road race under auspices of the Savannah Automobile Club.*

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VERBECK THE VICTOR IN DAY AND NIGHT ROAD RACE

Defeats Nearly Fifty Starters, but is Protested by College Boy Who, in $50 Used Car, Finishes Second —Los Angeles-Sacramento Event Proves Thriller.

Winding mountain passes and roads skirting yawning canyons scarcely can be construed as an inviting automobile race course. Yet 443 miles of roadway in which that sort of thing obtains, to say nothing of deep sand or ordinary roughness, and which connects Los Angeles in Southern California to Sacramento in the northern part of the State, formed the course over which the daredevils guided motor cars of all descriptions, from the well-tuned-up racing car to a nondescript "plugger" in a race which was staged Friday and Saturday last, July 4th and 5th. It was a road race being the term.

And though the way was narrow and hilly and tortuous, and despite the number of contenders and despite also the fact that the race began at midnight on the Glorious Fourth, the winner of the Panama-Pacific contest, as it was called—Frank Verbeck, who drove one of the Fiat racers from the shop of E. E. Hewlett—made time, which was not indeed wonderful, was at least unexpected.

Frank Verbeck, who was supplemented at the wheel on occasion by Harry Ham, covered the 443.6 miles in 11 hours 1 minute and 16 seconds, or at the rate of 39.96 miles an hour. Although nine others had preceded him, corrected time gave second place to Ed. Waterman in a Buick, who circled the race track in Sacramento for the concluding flourish and brought up at the finish just 20 minutes and 9 seconds later than the winner; third position was captured by Barney Oldfield, also at the wheel of a Fiat; he finished a little over a minute later than Waterman. Charles Soules (Cadillac), W. H. Carlson, Jr. (Alco) and J. Fleming (Pope-Hartford) finished in the order named.

It is possible, however, that Verbeck's reign over his victory will be short lived, for a protest was filed by Waterman, the second man, upon the grounds that Verbeck did not stop at Fresno, one of the checking stations. The matter, of course, will have to be thrashed out by the contest board of the three A's.

The first entrant, Charles Soules in a Cadillac, was sent away from Los Angeles at midnight on the "Fourth," and at two-minute intervals the others followed in this order:

1 Soules, Cadillac	26 Jackson, Reo
2 McKee, Cadillac	27 Davis, Chalmers
3 Faulkner, Simplex	28 Kerrigan, Simplex
4 Bramlett, Apperson	29 Stitt, National
5 Toft, Simplex	30 Carlson, Alco
6 Pink, Cole	31 Hanshue, Apperson
7 Oldfield, Fiat	32 Bancroft, National
8 Verbeck, Fiat	33 Williams, Pullman
9 Beaudet, Cadillac	34 Bruce, Michigan
10 Morris, Mercer	35 Zacharias, Chalmers
11 Leach, Macomber	36 Cody, Stearns
12 Raymond, Mercer	37 Gage, Welsh.
13 Daniels, Locomobile	38 Siefert, Stutz
14 McKelvey, Overland	39 Wherrit, Mercer
15 Ruckstell, Mercer	40 Quinn, Stutz
16 Monroe, Touraine	41 Schnack, Ford
17 Rapp, Simplex	42 Powers, Stutz
18 L. Nikrent, Buick	43 Waterman, Buick
19 Mitchell, National	44 Draper, Metz
20 Stearns, Kissel	45 Fleming, Pope - Hartford
21 Swanson, National	
22 Kapuczin, Winton	46 Brown, Knox
23 Gochenouer, Moon	47 Devore, Stutz
24 Cassin, National	48 Giddings, American
25 McConner, Lancia	

The only one of the 49 entered who did not start was Dominic Basso, driver of the Alco which twice won the Vanderbilt Cup race, who had wrecked the car and nearly killed himself when he collided with a farm wagon in practice the day before the race.

At Bakersfield, the first checking station, Soules, first away, was still in the lead coming in at 4:24, and seven minutes later Verbeck came in, having passed seven contenders and made up 11 minutes' time on the first car. Oldfield followed and T. J. Beaudet and Omar Toft in a Cadillac and Simplex respectively were the next contenders to check in Bakersfield.

Soules was leading by nine minutes at Fresno, the second station, which he entered at 7:12, with Verbeck, Oldfield, Toft and Beaudet following in that order. After leaving Fresno, however, things changed. Before the 45 miles between Fresno and Merced had been covered Verbeck had passed Soules, and he arrived at the last-named place five minutes ahead of the Cadillac driver.

Having assumed the lead, Verbeck never was displaced, nor was the order of the leaders changed. Verbeck finished at 11:17:16 on the morning of the 5th, and was followed by Soules in the Cadillac 8 minutes later. Oldfield finished third and Toft fourth. Waterman (Buick), who on corrected time was second, finished tenth.

The time corrected, the first 18 contenders finished as follows:

No. Driver and Car.	Time.
1—Verbeck, Fiat	11:01:16
2—Ed Waterman, Buick	11:21:25
3—Barney Oldfield, Fiat	11:22:53
4—C. Soules, Cadillac	11:26:16
5—W. H. Carlson, Jr., Alco	11:28:03
6—J. Fleming, Pope-Hartford	11:28:20
7—Bancroft, National	11:35:52
8—Toft, Simplex	11:39:32
9—Hanshue, Apperson	11:56:30
10—Beaudet, Cadillac	11:57:31
11—Faulkner, Simplex	12:03:50
12—Briscoe, National	12:03:55
13—Schnack, Ford	12:27:44
14—McKelvey, Overland	12:44:12
15—Siefert, Stutz	12:46:53
16—Nikrent, Buick	12:47:34
17—Morris, Mercer	13:14:48
18—Kern, Kissel	13:16:56

Verbeck, provided he is not disqualified, will receive $5,000 and Waterman $2,500. The other awards are: Third, $1,250; fourth, $750; fifth, $625; sixth, $575; seventh, $525; eighth, $475; ninth, $425; tenth, $375.

One of the surprises of the race was Waterman's Buick. The car was not a racing machine. Waterman, who is a college student, claims to have bought it from a livery service man after it had done considerable duty, the purchase price being $50, and put it into trim himself.

Not an accident marred the contest, although Beaudet on two occasions supplied "fireworks" when the underpan of his Cadillac took fire from backfires in the carburetter. The cars of Verbeck, Waterman and Oldfield were Firestone-tired.

Dunnivan Repeats Last Year's Performance.

After several unsuccessful attempts to hold unsanctioned racemeets in various parts of the country, all of which were effectually blocked by the American Automobile Association, C. V. Dunnivan, already "in bad" with the sports governing body for previous offenses, succeeded in inducing a number of local amateur drivers to race against himself and themselves at Memphis, Tenn., on July 4th, and he managed the race so well that he came out the winner in the end.

Dunnivan's performance is virtually a duplication of what he did last year at the Tennessee State Fair Grounds track, when one of the participants was killed in a similar race; this year, however, the race was held on the North Memphis Driving Park track and, as was the case last year, one of the drivers was killed and several other persons were badly injured. Dunnivan's time for the race—he drove a Studebaker—was 3:15:00, and he finished five miles ahead of Aubrey Clapp in a Velie, who was the only other man of the 11 starters to finish the 100 miles.

The accident which resulted fatally occurred in the 51st mile and was due almost entirely to the poor condition of the track and the great clouds of dust that were thrown up. Driving a Marmon car, Don Grant was blinded by the dust as he came down the stretch in front of the grandstand and he crashed into a Chalmers car undergoing repairs at the hands of its driver, C. B. Jones. Grant was thrown out and so badly injured that he died later; both Jones and John Harp, Grants' mechanician, also were seriously hurt. The names of the other starters and the number of laps they made before retiring are as follows: J. B. Cook (Chalmers) 69, Chas. Grogan (Studebaker) 54, E. Boggs (Studebaker) 52, Don Grant (Marmon) 50, J. D. Whitehead (Buick) 33, Jack Bobo (Ford) 22, O. L. Stewart (American) 18, Joe Robinson (Speedwell) 15, Paul Robbins (Chalmers) 13 miles.

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USES OF MONTHLY INVENTORY

Far-Reaching Purposes Which it Serves and Guesswork Which is Avoided—Investments that May Represent a Steady Loss.

It is mighty good business to have a monthly inventory of the contents of the stock room, as odds and ends accumulate rapidly. Everything in the stockroom represents an investment. It is easy to have that investment far too heavy for the size of the business. It is easy to have that investment represent a steady loss. The way to avoid the loss is by looking sharply after the stock and having everybody in your employ know that you are keeping close tab on it. If your employees know that you are on the alert they will act accordingly.

How much of the stock in the stockroom is live stuff? How much of it is junk? Do you have a careful record of the material that goes in and out? Do you positively **know** that you are getting your money out of it? If not, a monthly inventory enables you to keep track of the stuff that is moving and will help you give decidedly better service to your customers, which is nothing more or less than saying that you are building up a better business for yourself.

Memory Plays Scurvy Tricks.

Do you have separate compartments for stuff that belongs to your customers? When an old shoe is left, is it properly tagged? Do you go over this "customers' junk" at regular intervals and notify the customer just what you have that belongs to him and suggest as diplomatically as may be that he remove it?

Memory is a fickle thing; a man thinks he left a good tire and later finds it was almost worn out. Three months have passed since he saw it. When you roll out that old casing for him he thinks you are trying to "put one over"; that is why one dealer inaugurated the plan of a monthly clean-up linked with cards tagged on every piece of "customer's property," indicating the date it was left and the condition of each article when left.

THE ONLY WAY TO PROMOTE THE SALE OF ACCESSORIES

There is money in selling electric horns; there is money in selling tire patches, blowout reinforcements, spark plugs and every accessory commonly in demand by motorists. And the wise, aggressive dealer is not overlooking the money to be made by installing electric lighting devices and selling storage batteries to those whose cars are not so equipped. There are any number of such cars, and while you cannot equip all of them you can equip some.

The way to make money in selling these articles, however, is to handle them as a regular department of your business. They should not be kept in an out-of-the-way stockroom to be shown only when a customer asks for them. Their place is in the show-room, or in a neat, attractive showcase in the garage, where they will be constantly seen by customers coming in and going out.

Selling Accessories by Suggestion.

There is an element of suggestion in the proper display of accessories that helps them sell themselves. People seeing an electric horn, for example, all ready for attachment, in your show-case, are sure to ask the price—and then it only requires good salesmanship to turn that into an order for the horn. "I can attach it right now if you wish," will close more than one sale when the customer is in a state of hesitancy.

"Out of sight, out of mind," is true about accessories—and you will never push them until you make them a real part of your business and display them properly. But when that day comes you will find them a powerful force for reducing overhead and increasing profits.

SHOW WINDOW BREAKAGE THAT PROVED ITS CLEANLINESS

Keep your windows clean. This is one of the elementary principles in window display that everybody can carry out, and the more thoroughly it is done the more effective will be the showing of whatever is in those windows. This has been preached before and will probably be repeated many times more because dusty or otherwise dirty windows are still to be seen here and there. Walk down the street of any town or city and you will be amazed to note the appealing influence of a bright, clean window.

Once in a while—but not very often—this sort of cleanliness may prove a source of trouble, as was recently instanced by an accident that happened to one of the windows of the Maxwell Motor Co.'s salesroom in Detroit, which is situated at the southwest corner of Woodward and Warren avenues, at the junction of the Woodward and Crosstown lines. The colored porter keeps these windows so immaculate that the glass is scarcely apparent. You see through the windows—you do not see the glass. In proof of this, a passenger on the Woodward car who was in a hurry to catch a "crosstown" walked right through the window before he realized that it was there. He was sober, too, and could only explain his action by saying that the windows were so clean and clear that he didn't see them, and as a matter of fact he thought they had not been put in place yet!

What are you working for? Whom are you working for? Do you know? If you are just making expenses, is it worth while? Make profits—not just expenses. Get the big idea—believe in yourself and your opportunities. Work—and work scientifically; don't guess—**know.**

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LESSENING ONE'S TROUBLES

Taking Reasonable View of Service Problem One Way of Doing so—Logic that Appealed to Near-Irate Customer.

The Ford Motor Co.'s Detroit branch believes in "service" and gives it to customers in no uncertain fashion. Their service station is kept open day and night, but they do not regard it as necessary to have the office and salesroom and repair department open at all hours. At six o'clock the office closes, and the employes of the repair department quit at the same hour as those in the factory.

This plan makes life worth living and keeps the men in better shape to tackle the problems of each day. Because a man sells automobiles it is no reason he should live the life of a drug clerk and be on the job 18 hours a day. This idea of doing business in business hours seems strange to those accustomed to the "day and night service" talk, but its reasonableness is so apparent that customers rarely object.

Skeptical Customer Convinced.

"Sitting here the other night, about six o'clock," said Manager Ryan in discussing the subject, "the telephone rang and someone on the line said his car would not run; would we send down and get it? I explained to him very politely that we closed at 5:30, and that the best thing for him to do was to have a near-by garage get it and store it for the night and we would call for it at eight in the morning. 'Is that what you call service?' asked the man, and he proceeded to tell me what he thought of it. 'Wait a minute,' said I. 'If you wanted a loaf of bread at ten o'clock at night and went down to the grocery and found the man in bed you wouldn't be annoyed, would you?' He allowed that he wouldn't, but insisted that an automobile was different from a loaf of bread. But it only took a few moments' conversation to have him get the point, and when I once more explained that at eight in the morning we would call for his car and give it instant attention he was satisfied that, after all, we were doing business in a business way and that our service was just as real as we said it was."

All of which goes to illustrate the point that your troubles can be minimized if you follow a logical plan and are always very much what you choose to make them. A night trouble-force costs very much more to maintain than ever can be extracted from it by the very finest kind of bookkeeping and financing. Common sense dictates that it pays to keep the service idea within reasonable lengths.

WHEN TOO NUMEROUS DISPLAYS CREATE WRONG IMPRESSIONS

"A showroom should never be loaded with cars," is the view of A. K. McLuney, manager of the Studebaker branch in Detroit, on that always interesting subject. "A showroom full of cars gives the impression that sales are slow and that plenty of cars are on hand, and that the cars you sell are unpopular; a few cars properly placed create a better impression. But these cars should not be allowed to remain in the same position more than three, or at the most five, days. Change them about often, giving a front, then a side, and later a rear view of each car, and rearrange them constantly.

"At least once a week all the cars, save one, perhaps, should be removed into the garage or another part of the premises, and just as often as possible a new car displayed. The psychological effect of all this upon the minds of the public in general will be appreciated by every dealer who understands human nature.

"The constant evidence that you are doing business, that cars are moving fast, that the demand is much greater than the supply, creates interest and excitement—causes talk in the entire community and increases the demand for that product. People are generally anxious to secure what is hard to get, and especially is this true of cars."

SELF-STUDY AS A MEANS OF ASSISTING SALESMANSHIP

Any course of reading or study or any system that helps a man to better and clearer thinking, that gives him better understanding of other men, or in any way adds to his stock of useful knowledge, will make that man a better salesman.

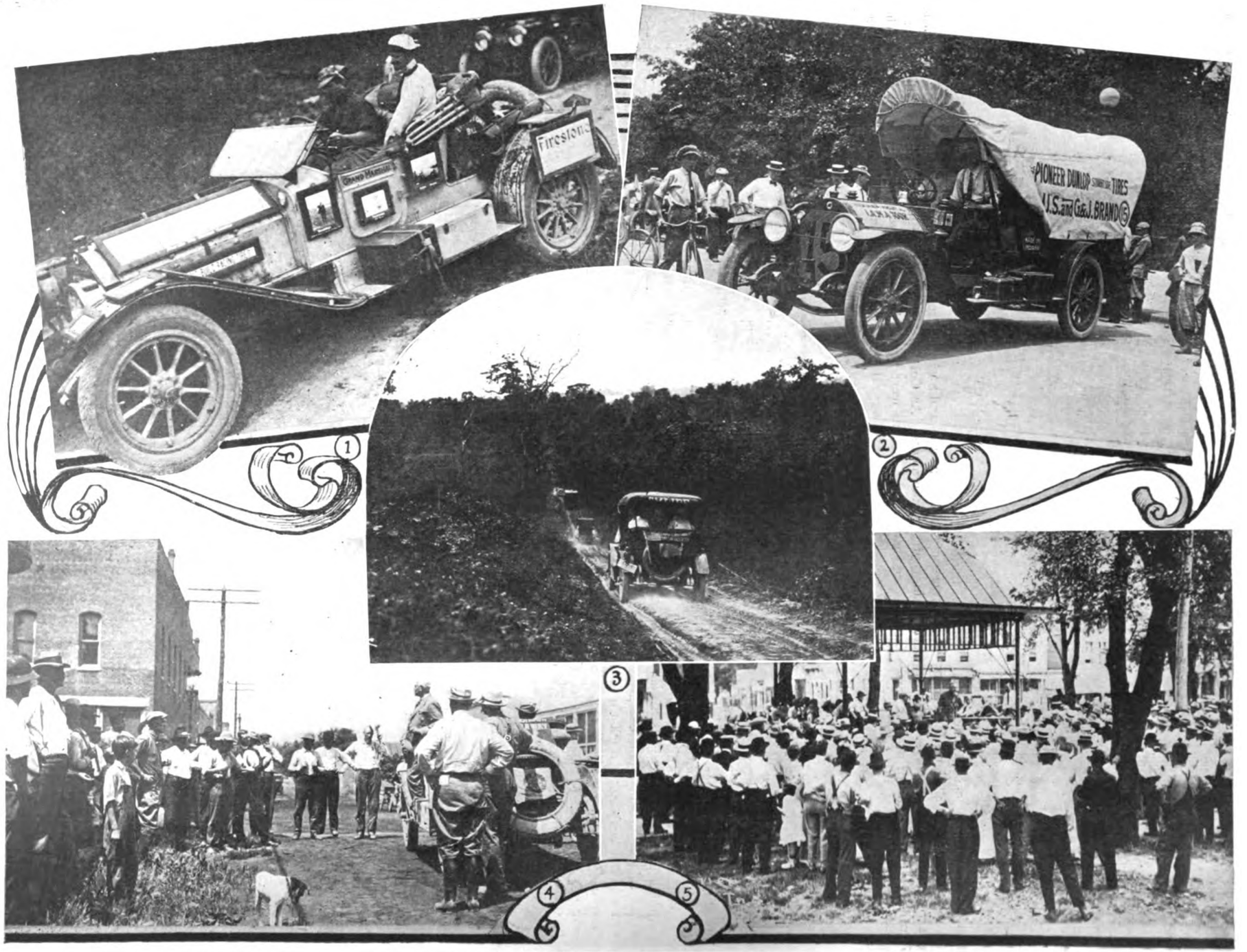
The part that character and personality plays in salesmanship is often underestimated and often not understood at all. It will be more clearly and definitely understood in the future. The men will realize that it pays big dividends to foster and develop character. They will realize that it is possible, by patience and watching and study, to develop a strong, well-balanced personality.

"I am what I am" holds no place in the philosophy of the modern salesman. He realizes that if he is not at present the kind of man he wants to be it is possible to build and develop the qualities that are lacking. He sets for himself a standard of measurement that includes all those qualities he knows will make him a more efficient salesman and frequently applies the measure to himself to ascertain where he is lacking. If he is in earnest he does not skip here and there, but resolutely and candidly seeks for the facts about himself—he knows that growth and development do not come by accident but by intention. And he knows that just as surely as the plant placed in the right soil and cultivated carefully will develop growth and strength so it is with a cultivated personality.

Brains and personality are worth more than money. What are you doing to develop both?

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SOME PICTURESQUE FEATURES OF THE "BOOSTING INDIANA" CROSS-CONTINENT TOUR



1—FIRESTONE CAR. 2—G & J "PRAIRIE SCHOONER." 3—DEEP IN THE WOODS. 4 AND 5—"BOOSTING INDIANA" EN ROUTE

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THREE STATES CROSSED BY "MADE-IN-INDIANA" TOUR

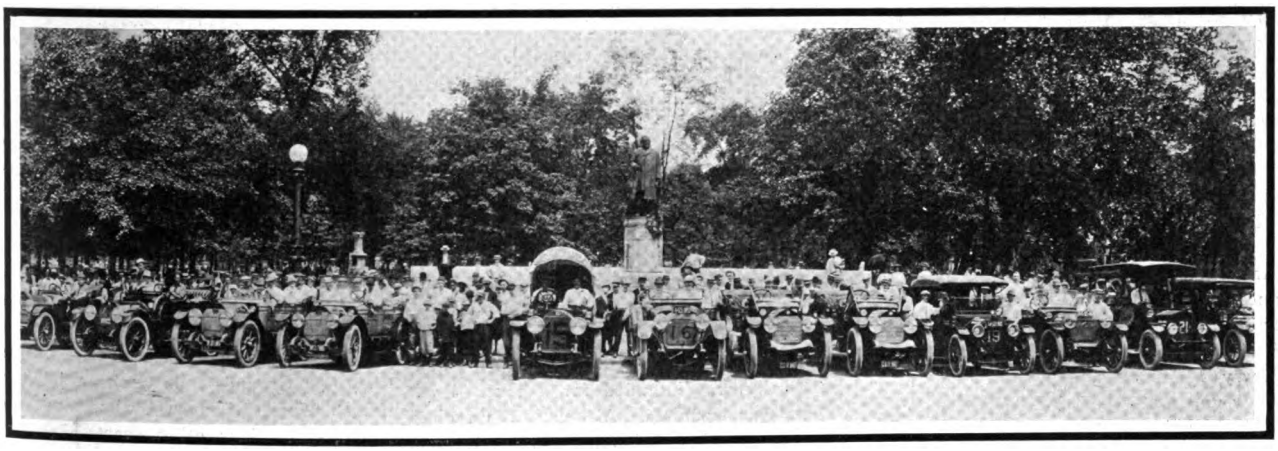
And Much Entertainment and More Dust is Encountered in the Crossing—Spat at One Time that Threatened Trouble.

With the dust of three States behind it, and the makings of a fine little spat tucked away in its waistcoat pocket, so to speak, where it won't breed trouble again, that "Made-in-Indiana" tour has reached into Colorado and to-night (Thursday) the boosters rest in Colorado Springs with just 1,297.7 miles to the credit of the 18 cars that carry the tourists, and that is one-third of the distance. By Sunday they will reach Ogden, Utah, and before the ensuing week has spent itself they will be well on the last leg of their journey to the Pacific Coast. Poor roads set the tourists back a little and caused a loss of four hours in the run to St. Louis.

So far, except for the spat already mentioned, everything has gone smoothly—except also the dust, which grits in the teeth; there has been little rain and so there has been little mud, but the eddying gusts of dust have made up for the lack of mud. The trouble that at one time threatened to grow serious was due entirely to discriminate boosting on the part of former Mayor Bookwalter of Indianapolis, and though it now has been all cleared away, it caused a lot of feeling while it lasted. Evidently, Bookwalter's regard for Carl G. Fisher and his transcontinental roadway dispelled from his mind nearly all thought of the manufacturers responsible for the tour. At any rate, in the speeches he delivers wherever a halt is made, he said so much about Fisher and so little about Indiana and Indiana-made products that long before the second day's night stopping place was reached the cloth map of the projected transcontinental highway that were attached to the sides or rears of the cars at the start, were left to curl up by the roadside. When their absence became painfully evident to Bookwalter his speeches assumed a different tenor and Indiana products got a boost according to schedule once in a while.

All along the route that has been followed, from Indianapolis to Terre Haute and then through Springfield, St. Louis, Columbia, Kansas City, Fort Riley, Ellis and Burlington, there have been smokers and dinners and theater parties and various other kinds of entertainments. At Columbia, Mo., for instance, the tourists were particularly well feted, for there were those on the reception committee who remembered that 19 years ago to the day Elwood Haynes, who is one of the party, operated a motor car for the first time in that part of the country in Columbia and that it was a car that he himself had built.

As the cars move westward burdens are being lightened in anticipation of at least a few pieces of rough going. In a great many cases suit cases and other luggage is being shipped ahead in order to make more room in the tonneaus to stretch weary leg muscles.



THE 18 CARS AND THE TOURISTS IN THE "MADE-IN-INDIANA" TOUR LINED UP BEFORE THE START

Brighton Beach Racemeet for August 9th.

With the success of its last two ventures fresh in mind, the Motor Dealers' Contest Association of New York City has definitely decided to revive automobile racing on the Brighton Beach mile track; the date for the meet has been set for August 9th. Although at first it was proposed that the meet be held either the third or fourth Saturday in July, it later was decided to change the date to permit those drivers who have entered the Galveston Beach and other meets to drive.

THREE RECORDS TO MULFORD IN 200-MILE COLUMBUS RACE

"Smiling Ralph" Wins Eight Trophies in Race that Cost Two Lives —Harry Knight Pays the Penalty.

Marked by a double fatality and three new records, the third annual 200-mile race promoted by the Columbus (Ohio) Automobile Club on the Columbus Driving Park track on the afternoon of July 4th, is likely to live long in the memories of those who saw it. Smiling Ralph Mulford, driving a Mason car, won the race, and it was he who set up the new records. Harry Knight, who in last year's 500-mile race on the Indianapolis Speedway risked his own life to save that of another, was one of those killed; his mechanician, Milton Michaelis by name, was the other.

Mulford's time for the 200 laps was 3:21:48 as against 3:28:04.50 which was the record established by Spencer Wishart in a Mercer in last year's race, when he also set up new records for both the 100- and the 150-mile marks. Mulford's times for these two distances were 1:38:49.38 and 2:28:31.55, respectively; Wishart's were 1:40:51 and 2:30:51, respectively. Harry Endicott, at the wheel of a Nyberg, was second in 3:45:55; E. Reeder in a Mercer was third in 3:47:53.65, and Ralph De Palma, also in a Mercer, was fourth in 4:00:42.1.

Mulford won his race by cool, consistent driving, in which his generalship was made plain by the fact that he finished on the same set of tires he started on; in the whole of the race he lost but 40 seconds in replenishing oil and gasolene. For the first 25 miles, Richenbacher in a Mason led the bunch, when a see-saw between him and Mulford commenced; shortly afterward,

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Mulford took the lead and from then on to the finish he was not headed.

The accident which resulted in the death of Knight and the mortal injury of his mechanician occurred when Mulford was in his 175th mile. For a long time Knight, who drove a special front-drive car styled the Rovan and made in Columbus, had been having trouble and was more than 50 miles behind Mulford. It is said that he was warned by the referee not to re-enter the race because of his well-nigh hopeless position but that he disobeyed instructions and drove out onto the track. In the next round his car skidded violently on the home-stretch turn, partly turned over and spilled out both occupants in a cloud of dust almost directly in front of John Jenkins, who drove a Schacht. Jenkins swerved his car as near to the fence as he dared but was unable to clear Knight, who lay prostrate on the track. He was killed instantly. Michaelis died the following day in the hospital from a fractured skull. Jenkins's car was so badly smashed that he was forced out of the race. At about the same time, William Fritsche, who had the wheel of a Senate car, was forced out with mechanical trouble.

Of the others who started, Richenbacher in a Mason, after leading the bunch for 25 miles, was forced out, as was Madden in a Nyberg. Four of the cars that were scheduled to start failed to put in an appearance. Meneghetti's Fiat developed engine trouble in morning practice; Walker's Garford and the two Ohio cars to be driven by Harry Matthews and J. Raimey, did not show up.

For winning first place, Mulford received no fewer than eight cups in all, to say nothing of $1,500 in cash. The cups were those presented by the Chamber of Commerce, Virginia Hotel, Lang's Dye House, Butter Krust Co., Rogers Supply & Tire Co., Automobile Trades Association, Hartman Hotel, Vehicle Apron Co., and the Valley Products Co. Endicott, the second man to cross the finish wire, received $800 in gold and a cup from the North Side Chamber of Commerce.

Harry Martin Killed on Speedway.

Harry Martin, who sat beside Charles Merz all through the 500-mile race on the Indianapolis Speedway on Decoration Day and helped him to pilot his Stutz into third place, was killed on the Speedway on Thursday last, 26th ult., while driving a Stutz testing car at high speed; Frank Agan, Martin's assistant, was probably fatally injured. At the time of the accident Martin was driving the car at high speed around one of the turns when it blew out a shoe, struck the concrete retaining wall, and, rolling over, pinned both men beneath it.

DISBROW STAR PERFORMER BUT MASON ALSO TWINKLES

Former Bags Feature Event at Sioux City Meet and Latter "Cleans up" in Smaller Races—Nikrent also Shows.

Although Louis Disbrow won the "headliner" of the two days' racemeet which was staged on the mile dirt track at Sioux City, Iowa, Friday, July 4th, and Saturday, July 5th—the sweepstakes, which went for 48 miles—it was George Mason, who piloted the little Mason Special car, that bagged the lion's share of the 12 contests which comprised the two days' program. Besides winning the feature event of the first day—a free-for-all which went for 40 miles and was completed in 32:36—Mason also annexed the 16-mile race. Chandler (Mason), Disbrow (Case), Snyder (Mason) and Nikrent (Case) disposed of the remaining races carded for the first day.

On the second day Mason came out best in a 10- and 12- mile event, and when Disbrow captured the 48-mile sweepstakes in 42:35 Mason was not far behind; Disbrow also won the 12-mile handicap; he drove the Simplex to victory in both cases. Snyder and Chandler, both Mason pilots, disposed of the remainder of the program.

Because of the blue laws which are strictly enforced in Sioux City, the meet which originally was intended for a three days' affair was curtailed. Although the racing was tame, a few thrills were aroused when Nikrent, driving a Case car, circled the track four times with his car in flames during the sweepstakes race. The fire was only extinguished when he brought up at the pits and a chemical extinguisher was applied. The summary:

Friday, July 4th.

Six miles, for a purse of $50—Won by Chandler (Mason Special); second, Wetmore (Chalmers); third, Endicott (Case); fourth, Ulbrecht (Pirate). Time, 5:27.

Ten miles, for a purse of $100—Won by Disbrow (Case); second, Nikrent (Case); third, Ulbrecht (Pirate); fourth, Wetmore (Chalmers). Time, 8:40.

Sixteen miles, for a purse of $200—Won by Mason (Mason Special); second, Nikrent (Case); third, Disbrow (Case). Time, 13:39⅕.

Twenty miles, for a purse of $100—Won by Snyder (Mason Special); second, Wetmore (Chalmers); third, Newhouse (Case). Time, 18:08.

Eight miles, novelty race for a purse of $50—Won by Nikrent (Case); second, Mason (Mason Special). Time, 7:19.

Forty miles, free for all, for purse of $250—Won by Mason (Mason Special); second, Newhouse (Case); third, Disbrow (Simplex); fourth, Wetmore (Chalmers). Time, 32:36.

Saturday, July 5th.

Six miles, for a purse of $75—Won by Chandler (Mason Special); second, Endicott (Case); third, Wetmore (Chalmers). Time, 5:17⅘.

Ten miles, for a purse of $100—Won by Mason (Mason Special); second, Nikrent (Case); third, Endicott (Case); fourth, Disbrow (Case). Time, 8:34⅕.

Eight miles, for a purse of $100—Won by Snyder (Mason Special); second, Newhouse (Case); third, Wetmore (Chalmers). Time, 7:19⅖.

Twelve miles, for a purse of $150—Won by Mason (Mason Special); second, Endicott (Case); third, Disbrow (Case); fourth, Nikrent (Case). Time, 9:58⅕.

Twelve miles, handicap—Won by Disbrow (Simplex); second, Endicott (Case). Time, 10:21⅕.

Forty-eight miles, sweepstakes, for a purse of $250—Won by Disbrow (Simplex); second, Mason (Mason Special); third, Endicott (Case); fourth, Nikrent (Case). Time, 42:35.

Only One Man Survived the Century.

Out of a field of seven starters only one man finished the 100-mile race promoted by the Automobile Club of Columbia, S. C., on the Fair Grounds mile track on July 4th; H. B. Moss, driving a Chalmers car, won in 1:59:10. Four other events that were scheduled were called off because in the estimation of the A. A. A. representative the track was insufficiently guarded, a decision that was reached after Willie Wilds in a Buick struck a spectator on the backstretch in the 90th mile and crashed through the fence; the spectator, whose leg was broken, attempted to cross the track from the infield. Wilds was awarded second prize, though he did not finish, and third was given to Kyle Benet, who drove a Chalmers. The only other event to be run was a one-mile exhibition drive by M. Rawles at the wheel of a Mercedes; his time was 1:02.

New Australian Record for Ford.

Some idea of the difficulties to be encountered in touring Australia may be gathered from the fact that in a trip of 335 miles, the driver of a Ford car, S. A. Cheney by name, passed through no less than 98 toll gates, 88 of which he had to open himself. Despite this fact, he established a new record for the trip between Adelaide and Broken Hill, covering the distance in 13 hours 55 minutes.

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ENLARGED HEAD THAT FOLLOWS PROMOTION

The Sales Manager Tells Reilly About the Man Who Forgot to Be Considerate After He Rose Above the Ranks—Egotism and Haughty Attitude That Are But Stone in Path of Progress.

It had been ham and eggs for breakfast, and while the Sales Manager was content to lie under the shade trees on the lakeside farmhouse lawn and smoke, Reilly was loath to let such a fine morning go to waste so that gave him a prior right to the grounds, and when several salesgirls from a department store appeared on the scene they respected this prior right and waited to see the outcome. Reilly urged and

"I made several runs—over in the garden after my ball. There ain't no score!" replied Reilly.

"Thought you could play? You said you could."



"SYDNEY SEEMED TO TAKE DELIGHT IN SEEING HOW OVERBEARING HE COULD BE," SAID THE SALES MANAGER

and he begged and pleaded with the Sales Manager to shake himself a bit and play croquet. Croquet is generally associated with men of less mature years, but Reilly, the Sales Manager and their families were "vacationing" in the country at a farmhouse on the shore of a little lake and if a grown-up man wanted to acquire the croquet fever who was to prevent him?

When the Sales Manager worked he worked and when he loafed he loafed, and to get him to do the one when he was doing the other or the other when he was doing the one was an impossibility; and to see him hammering a wooden ball all over the lawn with a wooden mallet when he could just as well be lying in the shade savored too strongly of work.

But Reilly was persistent. He had a mallet in his hand and was suggesting a game, urged; he threatened to hit the Sales Manager with the mallet; but it did not do a bit of good.

"I'll play you, Mr. Reilly," volunteered a Titianesque blonde who was a couple of notches higher in the store than the other girls and who deported herself accordingly.

Reilly consented, and amid the laughter of the audience was still struggling at the middle wicket on the return trip when his sunny-topped rival tapped the stake; it was plain he would be welcome elsewhere, for the other girls wished the grounds, so he left the blonde to domineer the game and the other girls—who were just plain saleswomen while she was "head of stock"—and Reilly joined the Sales Manager beneath the tree.

"What's the score?" chided the salesman.

"Can't come back, I guess," said Reilly. And then, after several moments, during which they listened to the high-pitched voice of the blonde running the whole show, he added: "Isn't she one little snip?"

"Who? The Blonde?"

"Yes; look how she bosses those girls around. I suppose she thinks she's made of something different just because her mess of hair got her a job."

"You're not sore, are you, Reilly?" chided the salesman.

Reilly assumed an imitation grouch and made answer: "I guess you'd be sore if she walloped you the way she did me—and all the rest of that crowd looking on. And just listen to her," and he mimicked in a subdued falsetto, "No, Annie; the rules say you can't do that; you dont' get another shot; your foot slipped."

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"Once upon a time," began the Sales Manager, "there was a man——"

"Yes?"

"There was a man——"

"What's the rest of the story? What was his name? What's the story?" asked Reilly, wondering if the Sales Manager was trying to "kid" him with a childhood yarn.

"The rest of it is that his name was Henry McK. Sidney and he was a twin brother to your blonde friend."

"Then you knew her before we came here?"

Panning With Good Intent.

"No; but having known Henry I feel quite well acquainted with her type; he wasn't exactly a blood brother, but a sort of member of the brotherhood of snips."

"Oh!" said Reilly, enlightened.

"One of these get-a-boost-and-it-goes-to-your-head guys; you know, don't you?"

"Rather!" was the dealer's comment.

"Henry," continued the Sales Manager, again taking up his once-upon-a-time story, "used to be a salesman—just a common, ordinary salesman, and when I first knew him he was drawing $30 a week and considered that the top notch of affluence. He was a salesman along with a lot more of us, and we pulled around together quite a bit; we came in contact with each other more or less, and quite a feeling of fraternalism sprang up.

"I remember well those old days," reminisced the Sales Manager, with a far-away gaze across the lake to the wooded hills beyond; "we all had ideals then and used to discuss our trade and trade conditions, and I daresay we had a remedy for every known ill or unsatisfactory condition, and there wasn't a man of any prominence to whom we couldn't have given cards and spades in his business and then beat him by several points. Gee! But how we used to pan some of the men we had to meet at the different factories and offices. Some of them were regular hardshell crabs and maybe we didn't hate them! One in particular—old Baldy Baldwin, we used to call him. He was the rottenest man to go up against!

Raise That Went to the Head.

"Baldy would say the meanest things to a salesman and would act in the snippiest manner—that is, when he would see you at all—and if we had had our way we would have soaked him in the eye every time we got into his office. But, of course, while the house we worked for was willing to stand for a lot of things, we rather felt it would object to our going around poking customers in the eyes. Then there was——"

"What's all this got to do with Mr. McK. Sydney?" interrupted Reilly, who commenced to evidence signs of a grouch.

"Oh, yes! Sydney—I forgot about him, or, rather, I was a little slow in getting around to him. Well, as I said, we used to pan everyone, and Baldy Baldwin in particular, and when a couple of us would meet in the same hotel and have an evening to kill, Sydney was the ablest panner, and the things he used to say about old Baldwin would have made his hair bristle, if he had had any.

"But to get to the real story: After a while Sydney got pretty good on the road and when there was a vacancy in one of the manufacturing plants with which we used to do business they asked Sydney if he wouldn't like the job, and he took it. He became a combination of a purchasing agent and several other things; he had some kind of title, although I can't remember just what it was. When Sydney landed that job all congratulated him and ourselves because we thought there was going to be one bright spot in our trips. We thought that calling at that office was going to get us a glad hand, even if we never landed an order."

Royal and Exalted Snippiest Snip.

"But he joined the Brotherhood of Snips," suggested Reilly.

"You're right; not only joined, but got himself elected to a high office. He was Most Royal and Exalted Snippiest Snip, or something of that type, and he proceeded to hold down his job in top-notch fashion. Of course, he didn't join the order and advance to that high office immediately, for his progression was gradual, even if it was rapid. When we first called on him he was half decent, but it wore off quickly and it wasn't long before he had old Baldy Baldwin beaten to a standstill.

"We all had said in the former days that if any of us ever landed a job of that kind we would remember our experiences of our outside travels and be considerate of the feelings of the people who had to do business with us; but Sydney seemed to take delight in seeing how overbearing he could be and if one of us would have gotten down and groveled in the dust on the floor I guess it would have tickled him half to death. He had forgotten all about the times when he used to cuss Baldy Baldwin and he took advantage of every possible occasion to try to impress upon us his greatness since he had been made a something-or-other in the factory."

"Why didn't you tell him what you thought of him?" asked Reilly.

"I was getting to that," continued the Sales Manager. "One of the boys did that very thing. He got tired of Sydney's overbearing tactics and one day when he was in Sydney's office Sydney did something particularly nasty and this salesman told Sydney he didn't like the way he was acting since he got promoted. This salesman was quite well acquainted with the 'old man' in this factory and had more license to take a fall out of Sydney than any of the rest of us did.

Haughtiness Gets Its Just Deserts.

"'Oh! you don't like it, eh? Well get to h—— out of here and don't you ever come back!' said Sydney.

"'I'll get out of your office, all right,' said the salesman.

"He took his troubles to the 'old man' and the 'old man' went in to Sydney and said, 'Tut, tut, my boy, don't get too high up, for the higher we go the harder the fall. Remember that you were a salesman once and don't be too hard on these boys. Shake a hand with 'em; remember how you liked to be treated when you were drumming around.'"

Sydney resign from the Order of Snips?"

"No; he couldn't; it wasn't in him; he high-horsed around until the 'old man' himself got sick of him and let him down the slide."

"He opened the back door and pushed himself out into the back yard," said Reilly.

"That's it, exactly," smiled the Sales Manager. "There's one thing I try to do, and that is to be decent to people who have to come in contact with me. It doesn't do any good to be haughty and overbearing; the only one it can benefit is yourself, and the only benefit you can get out of it is a little self-gratification, which in the end will always turn up to hit you in the face.

"I never will forget the disagreeable people I have been obliged to put up with and I never want to have people say about me the things such as we used to say about Baldy Baldwin. The only excuse I ever could see for such conduct was a mean disposition, and when a man gets so he can't control his own disposition he needs an operation.

Reilly's Disposition Disclosed.

"Now, your disposition——" and the Sales Manager slapped Reilly on the top of the head.

"Ouch!" shouted the slapped one. "What in h——'s the matter with you? Don't you know any better than that."

"Well, you old sore-pate, the next time you go rowing in the hot sun don't let your hat blow away." And the Sales Manager, entirely unsolicited, threw away his snipe, picked up a mallet and issued a challenge to the whole world.

"Yes," he added, "and I'll spot anybody three wickets."

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GENERALSHIP THAT PULLED SALE FROM THE FIRE

Scientific Treatment of a Problem Which Effected a Sale That Would Have Been Passed Up by Many as an Impossiblility—Sales General and Able Salesman and How They Cooperated in Their Work.

Salesmanship is one thing; sales generalship is another thing; a sales general and a salesman are an almost invincible combination—provided they live up to their titles and are worthy of them.

There are among the readers of Motor World two men who may be said to afford excellent types of these two classes of men; one can sell cars, and lots of them; the other may not be so good a salesman, but he is an efficient director of sales work. The two together have pulled from the fire sales that neither alone probably could have saved. They are real men, not characters of fiction, but for the purposes of this story their names may be Cass and Gray. Cass is the sales general, Gray the salesman.

The two stood in the salesroom one day as a Z—— car stood at the curb in front of the salesroom of the dealer next door; as they watched, a man emerged from the Y—— salesroom, next door and went to crank the Z—— car.

Opening Fire on Dr. Brown.

"That's Dr. Brown. He was in here the other day, but I guess he has decided not to buy our car. Go out and speak to him," said Cass, the sales general.

Gray couldn't see what good it could do, but he did as directed.

"I see you've got your old Z—— car yet, doctor," he remarked.

"Yes," replied the physician.

Other conversation followed, and it led up to this statement by the doctor: "I don't like Cass. I won't have anything to do with him. He offered me only $600 for this car in trade."

"I'll tell you what I'll do, doctor," quickly replied Gray when this admission was made. "I'll get Mr. Cass's permission to handle all your business hereafter."

Gray did so, and Cass told him he should tell the physician that inasmuch as the $600 offer was made three weeks ago, the offer now was $550, because of succeeding depreciation in value. To Gray this seemed almost foolish, inasmuch as the doctor had said he was practically decided upon a Y—— car, but he respected his chief's judgment and returned to talk to the doctor. Finally the physician point blank asked how much he would be allowed on his car.

"Five fifty, doctor," genially replied Gray. "You see, it isn't worth as much now as it was three weeks ago, and the chances are that next week it will be worth still less."

The physician's answer was to throw in the clutch and drive away.

Two Weeks' Depreciation.

The foregoing conversation occurred on a Friday; on the following Friday afternoon Cass said to Gray, "It's a week now since you saw Dr. Brown. Better go up and see him to-night. Offer him $500."

Gray did as directed, and it must be said that much of Gray's efficiency lies in his ability to follow instructions to the letter. He called on the doctor, and pleasantly and as a salesman should, engaged him in conversation and led up to the car question. The doctor mentioned the fact that all that lay in the way was the amount he wanted in trade, and he was much nettled when Gray offered him $500 "because the car had depreciated that much in its last week of use."

The physician expostulated. Gray explained that a car in such a condition would depreciate rapidly until it got down to about $200, and would be worth about that much until it went to the junk pile, but that it certainly could not be worth any more than was being offered for it. The physician refused emphatically to have anything to do with the proposition and Gray departed.

Pressing Invitation to Depart.

The following Friday Cass said to Gray, "Better see Dr. Brown again. Offer him four fifty."

"He'll throw me out, Mr. Cass. You know just as well as I do that he won't listen to such an offer."

"Well," slowly replied Cass, "you'll get your salary just the same, won't you? I'm the man who will lose if I'm on the wrong tack."

"Quite right!" agreed Gray, and he called on Dr. Brown again.

This time they weren't long in getting to the question, and when Gray announced that the car was now worth but $450 the physician arose, opened the door and said, "I wish you wouldn't come up here wasting my time and yours. I refuse to listen to you. Good evening." And he motioned for Gray to leave the office.

Gray couldn't see just where these tactics were to avail anything, but he was perfectly willing to carry out instructions to the best of his ability, and when, a week later, Cass told him it was about time to call on Dr. Brown again Gray smiled, a trifle sceptically, perhaps, but went. His scepticism was not apparent as he again approached Dr. Brown, and he acted for all the world as if he was making the physician a good proposition when he offered him $400 for his old car.

Again the doctor in no uncertain language invited Gray to remove himself from the office and not come around again with such nonsensical stuff as he had to offer. This made twice, eight days apart, that Gray had virtually been thrown out of the physician's office, and this would have been the signal for many salesmen to give up the task. But Gray went back and reported to Cass, who only smiled.

Demonstrating Under Difficulties.

Saturday of the following week Cass said to Gray: "Now, Sunday ought to be a fine day, and I think you ought to give Dr. Brown a demonstration. Take a car and a chauffeur and give him a ride; take him anywhere he wants to go, buy him a lunch out in the country or wherever you think best."

Gray didn't slip any armor plate under his vest for fear of buckshot, although he was somewhat doubtful as to the results of his errand. But he did as directed and drove up to the doctor's residence and office, walked into the waiting room and told the doctor it was such a fine day he had come to take him for a ride. The doctor didn't seem anxious, but inasmuch as he had a call to make, Gray offered to take him to the patient's residence. The doctor consented, and as the physician left the car Gray said he would wait for him, as he wished to give him a little run, the morning was so fine.

Dr. Brown rather grouchily told Gray he needn't wait, that he would go back on a trolley car. But when the physician emerged Gray and the car were still waiting and Gray directed the chauffeur to

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take a drive over a certain road. Gray talked car hardly at all. When the car hit an unusually rough spot and the passage was made in comfort, Gray would say, "You'd hardly notice that rough spot, would you, doctor?" and then Gray would immediately switch to a foreign topic.

The party sped on to a cozy little eating place Gray had in mind, and over the lunch cars were pretty much a foreign topic. They talked of everything else; Gray, instead of putting the physician on the defensive by hammering him on the car proposition, was permitting the doctor to become the aggressor in the sales work. After lunch Gray directed the chauffeur to take them to the doctor's residence, and when they reached the house Gray, without a mention of the car, was bidding the physician farewell when the doctor asked him if he wouldn't come into the office.

In the office the physician said he really liked the car and wanted one, but couldn't see his way clear to accept the offers which had been made to him. In the course of the conversation he asked about the trade-in deal and what he would be allowed.

"Three fifty, doctor," replied Gray. "Your car certainly isn't worth as much now as it was a week ago."

"See here, Gray," exclaimed the doctor, wheeling in his chair, "this is a damned outrage! Here you keep coming up here, wasting my time and your time, with the most foolish offers I ever heard. Three fifty! It's ridiculous! I won't take it!"

"It's all your car's really worth as it stands to-day."

"I'll tell you what I'll do, though," he replied. "That six hundred offer that Cass made me is low enough, but I'll take that."

"I can't do it, doctor," replied Gray with a convincing manner. "Your car was worth six hundred then, but it isn't now."

The physician—he had disclosed the fact that he wanted the car and wanted it badly—was at the wavering point, the sale stood a good chance of being made or lost right there, and it was up to Gray to do whatever was to be done.

"I'll tell you what I'll do, Dr. Brown," he said. "I've made you an offer of three hundred and fifty dollars for your car, but I'll remake the offer I made last week of four hundred. I really haven't authority to do it, but I'm sure Mr. Cass is not an unreasonable man and I'm sure he will sacrifice the small matter of fifty dollars rather than have it stand in the way. I'll allow four hundred on your old car. Sign right here."

Gray laid a contract blank on the desk in front of the doctor and the latter pulled out his fountain pen and began to sign, but all the time murmuring "damned outrage," "highway robbery" and such things. When he had signed the contract Gray said, "I'll need a five-hundred-dollar deposit, doctor."

"Five hundred dollars deposit!" exclaimed the physician. "There's my old car—that four hundred."

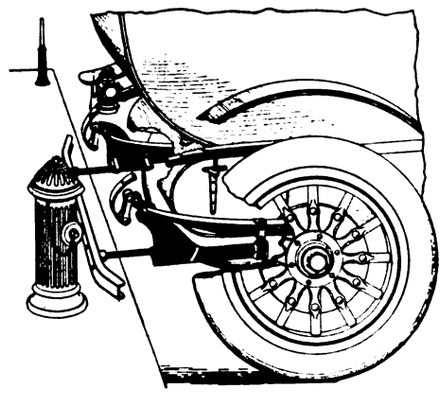
"I can't take the old car!"

"Five hundred dollars deposit! Damned outrage! Highway robbery! Colossal gall!" muttered the physician, but all the time he was attaching his signature to a check.

When Gray got the check and contract he bade the physician a very pleasant good day and walked out to his car. No general rules had governed this sale; it, like many others that were made by Gray and Cass, was an entirely separate and distinct scientific problem. In another case the tactics might have failed, but they won because Cass studied the man and the case and made the sale a campaign by itself.

Bumper Designed for Rear Protection.

The evil results that are likely to follow the head-on impact of an automobile against another of its own kind or any other object are easily imagined, and there is nothing to wonder at in the popularity of front-end bumpers. But while the effects of rear-end collisions are not so often considered, they are by no means to be ignored, as many dented rear tanks, marred bodies, buckled springs and other mute evidences of rough treatment bear witness. The protection of the rear end of the car has been made the special province of the M. J. L. rear adjustable bumper, manufactured by M. J. Leclerc, of 108 West 52nd street, New York, which is clearly shown in the accompanying illustration.



LECLERC'S REAR BUMPER

The bumper is so designed that it can be attached to all forms of spring suspension without the necessity for drilling holes in the frame, without removing the spring shackle bolts and without interfering in any way with the construction of the car; the shape and method of attachment of the brackets are plain from the picture. Coil springs are provided to take the shock in case the car is backed into anything, or if another vehicle runs into the car from the rear. A wide range of adjustment is provided, so that the bumper can be adapted to any car with very little trouble. Polished brass, nickel and black finishes are provided.

Misusing Storage Battery Terminals.

It is said of a well-known storage battery maker that so anxious was he that his instructions regarding the care of a certain battery shipped by freight on a car to a distant point reach the purchaser of the car that he wired the tag on which the directions were printed to one of the battery terminals. Which was all right as far as it went; it was practical assurance that the tag would not be separated from the battery by accident. But during the shaking up that the car got in transit, the wire holding the tag shifted itself around and short-circuited the battery, and when the owner attempted to start his car he had no "juice," of course. The moral is plain: Never attach anything to a storage battery's terminals except the wires that are supposed to be attached to them. The terminals may look like a handy means of fastening the battery, but they were not put there for that purpose.

Emphasizing the Value of Lamp Covers.

With the increasing use of electric lighting, the cost of the lamps themselves, or rather the expense of replacements of front glasses and lenses, has increased slightly, which serves to lend additional emphasis to the desirability of strongly constructed lamp covers for use when the lamps are not lighted. Covers are not expensive, and they can be relied upon to protect glasses and lenses from stones thrown up by preceding cars. Incidentally, they keep dust and dirt out of and off the lamps, and this service is of no small consequence when it is considered that the more the lenses and glasses of lamps are cleaned the greater the danger of scratching their surfaces and reducing their efficiency; also, even a tiny scratch weakens the glass considerably and renders it much more easily broken.

"Gas Charge" in Storage Batteries.

A battery that is fully and freshly charged and has had no current drawn from it since charging will show an open-circuit voltage that is far above the usually figured two volts per cell. A 44-cell battery, for instance, may read as high as 114 volts. This high figure very quickly drops, however, after the battery has been put to work. This high water mark of the voltage, so to speak, is usually referred to as a "gas charge."

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SIMPLICITY SIMPLIFIED IN ZEPHYR CONSTRUCTION

Some Common Components Conspicuously Absent—Spray Nozzle, Air Valve and Needle Valve Replaced by Simpler Devices.

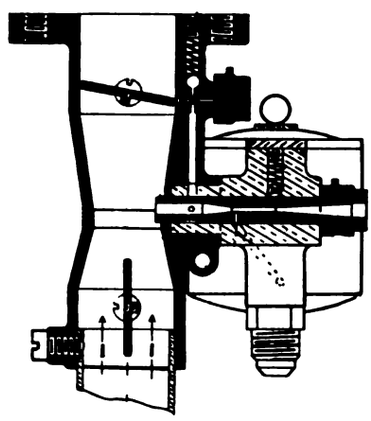
In the endeavor to reduce the carburetter to its simplest terms, while retaining all the advantages of more complicated types, so many different combinations of parts have been devised that there is an excuse for wondering how anyone can think up a new arrangement. Nevertheless, new ideas are brought to light with surprising frequency, and hitherto untried methods of doing with few parts what has been done with many are constantly being brought into the light of day. One of the most recent of these "simplified carburetters," and one that stands out by reason of the maker's statement that it has no air valve, no spray nozzle and no needle-valve, is the Zephyr, made by Breeze & Chapman, of Detroit, and marketed by the Hibbard Engineering Co., Majestic Building, Chicago. The accompanying illustration shows the extremely simple arrangement of the parts of the instrument.

The large vertical air passage, with a tapered section, is joined, at its smallest diameter by a much smaller passage opening into it at right angles; the opposite end of this small passage, which also has a restricted middle part, is open to the atmosphere. At its smallest diameter it is joined, at right angles to its axis, with four small holes opening into the passage, the holes being of graduated sizes. The plug in which the horizontal passage is formed can be turned from the outside of the carburetter with the thumb and finger. A small passage communicating with the supply of gasolene in the float chamber is formed in such a position that it will register with each of the holes in the horizontal air duct as it is turned. Gasolene is drawn through whichever hole is in register with the gasolene passage, and obviously the larger the hole the faster the flow. This arrangement takes the place of the usual spray nozzle, and by changing from one hole to another the flow of fuel may be varied.

About half-way between the gasolene passage and the point where the small air passage joins the main air passage a groove is formed around the horizontal plug, and holes through the walls of the plug place the groove in communication with the interior. A passage, drilled vertically through the wall of the large air tube, joins a second horizontal plug, which is made on the same principle as the lower one but is much shorter; it also is adjustable from the outside and has four graduated holes, any one of which may be brought into register with the vertical passage.

There are two butterfly valves of the type commonly employed as throttles, one near the bottom of the main air passage and the other at the point where the upper rotatable plug opens into the main air passage; the lower one is the throttle and the upper a "starting shutter." The throttle is used in the customary way, while the starting shutter is used only for starting the motor. The float chamber and its level-regulating devices are built on the usual principle, generally speaking.

The operation of the carburetter is easily followed with the aid of the illustration. Assuming the throttle and the starting shutter to be open, the air passes through the vertical passage and also through the horizontal passage, in the latter case taking up gasolene as it passes over the gasolene atomizing hole. The excessively rich mixture of much gasolene and little air enters the main passage and is mixed with the main air supply, so that there is a sort of double mixing effect which results in excellent vaporization. The dimensions and the shapes of the passages are such that there is automatic compensation for changes in speed.



ZEPHYR CARBURETTER

For starting or low-speed running the second or higher of the small air passages is brought into play by closing the starting shutter, which gives direct communication with the gasolene supply and shuts off most of the air, the result being a rich mixture. The more the shutter is closed, the richer the mixture; the adjustment is made from the dashboard. The effect of the starting shutter is practically that of priming the engine with atomized fuel, which has obvious advantages over priming with raw gasolene in the usual way.

One of the cardinal points of the Zephyr carburetter is its extreme accessibility. The atomizers can be withdrawn without the use of tools, examined, blown through and cleaned, if necessary, with the greatest ease; further, they can be removed to lock the motor. The cover of the float chamber can be swung open and the float removed from the valve and the valve itself taken out and examined. The level of the float may be changed without even stopping the motor. If desired, the main air passage can be swung around so as to be horizontal, if such a position is more convenient, or can be clamped at any angle by means of a pinching screw and split clamp arrangement.

To Prevent Rust on Wire Wheels.

That old saw anent the virtues of an ounce of prevention well may be applied by users of wire wheels to obviate the rusting which is likely to take place where the spokes cross one another. Regardless of the quality of the enamel that is used, constant vibration is likely to cause it to chip, and where it chips the spokes will rust and in time they will break if the rust is permitted to eat its way into the metal. The ounce of prevention consists of the application of successive coats of thin, hard enamel, say once or twice a season, or as often as the existing enamel shows signs of chipping or wearing off. Almost any good enamel produced for use on metallic surfaces will serve the purpose, and it should not be put on too thickly or it will show a tendency to chip easily. The better way is to apply several coats of very thin enamel, allowing each to dry thoroughly before the next is put on.

The drying process is an important part of the work and should be given ample time.

Fallacy of Camphor as Fuel "Dope."

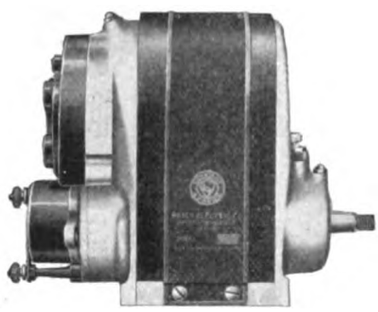
If it will console any of those who may have been tempted to adulterate their gasolene with gum camphor to know it, tests that just have been completed in England demonstrated beyond the shadow of a doubt that the addition of this pungent substance to the fuel makes absolutely no difference in either fuel consumption or speed; neither does it make an engine start any more easily than it ordinarily would start on simon-pure gasolene. The tests were conducted on the road under service conditions by a private owner and two cars, one rated at 10 horsepower (according to the British idea) and the other at 25 horsepower, were used. The camphor used was the Japanese article of commerce and the quantity added to the fuel was ½ ounce to the gallon in some of the tests and ¼ ounce to the gallon in others. No difference in the operation of the car could be distinguished after the addition of the camphor.

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REMY PEOPLE CONTENT TO MAKE GOOD MAGNETO BETTER

Detail Improvements Only Changes in Latest High-Tension Models —Cloth Gears and Timing Device Features.

Magnetos of the better sort, like the automobiles of which they are such important components, have been brought to a state of development where radical changes are not required, and such improvements as are found desirable are in those details which, though often referred to as "minor," are of vital importance. The latest model of the Remy high-tension magneto, manufactured by the Remy Electric Co., of Anderson, Ind., and which now is being presented to the trade, is a good example of a well-developed high-voltage generator in which established practice is adhered to and only



REMY MODEL P MAGNETO

slight changes have been found necessary.

The model P, as the new magneto is styled, is said to be absolutely water- and dust-proof. The end plates carrying the special magneto type ball bearings are accurately machined to fit the magneto and the distributer is fitted in the same way to the gear case, while the joints are provided with packing that forms an effective seal. Even the high-tension terminals are thoroughly water-proof. The circuit-breaker is protected by a cover of Bakelite and, incidentally, the same insulating material is freely used throughout the machine, the Remy company having installed the necessary plant for making and applying this substance, which is said to be superior to the best hard rubber in strength, resistance to heat and other qualities that are essential in a material of this class.

Rugged construction of the armature is provided by casting the hard bronze armature heads on the steel shaft, so that, though of different materials, they are practically of one piece. The cotton covering of the armature winding is impregnated with Bakelite. Slight improvements have resulted in increasing the speed of action of the circuit breaker, which may be removed for inspection without the use of tools. That vital little part, the circuit breaker cam, is of the finest chrome nickel steel, hardened and ground and tested for extreme accuracy. The breaker and its housing are reversible, so that the timing connection can be made on either side. The timing range is 35 degrees, and it is claimed that there is practically the same spark intensity at extreme retard as at extreme advance.

To the distributer is fitted a timing button, which brings the circuit breaker into proper position and locates the terminals for the purpose of making connections. This is a device that saves considerable trouble in timing the magneto.

The latest Remy dash coil is mounted with the switch, the coil lying behind the dash with its axis crosswise of the car; only the face of the switch, with its operating handle, appears on the driver's side; it has the usual magneto, battery and off positions and is fitted with a lock.

Particular attention has been given to the distributer gears, which of necessity are accurate in cutting and in the meshing of the teeth. The gear is of bronze and the pinion is of compressed cloth with steel plates, the combination forming a silent, smooth drive. Bakelite is found again in the distributer brush holder, which is rigidly mounted on the bronze distributer gear. The condenser and its casing form a tight cover over the armature; the active elements of the condenser are embeddel in a compound that is solidified by heat, while the outer covering is of Bakelite. The same care that is used in protecting the condenser from moisture is employed in the construction of the coil, which is so impregnated and enclosed that it is proof against the attacks of that great enemy of high-tension currents—moisture.

Proper Method of Testing Electrolyte.

In testing the gravity of the electrolyte in a storage battery a little of the liquid is drawn off with a syringe, put into a test glass and afterwards returned to the cell from which it was taken. It is important that all of the stuff should be returned, as the electrolyte from one cell, if mixed with that from another, may cause inaccurate and misleading hydrometer readings.

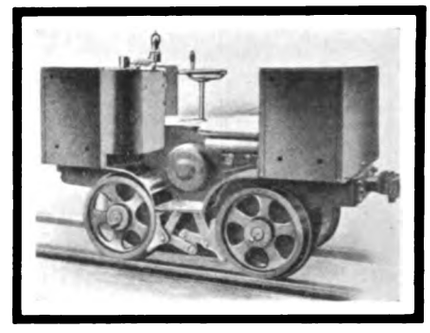
Simple Remedy for Vibrating Lamps.

Very often side lamps that are attached to the dash by means of projecting brackets will vibrate excessively at critical car speeds. Sometimes the fault can be remedied by altering slightly their position on the bracket—slipping them up or down a fraction of an inch—the theory being that their period of oscillation then is altered.

DIMINUTIVE RAIL TRACTOR THAT HAULS HEAVY LOADS

Little "Electric Engine" that Handles Fifteen Tons on Trailers—Four-Wheel Drive, no Steering, and Railroad Brakes.

The narrow-gauge shop railway originally intended chiefly to facilitate the moving parts too heavy for handling in other ways, has been developed and improved greatly since the time when its rolling stock consisted only of rough little cars moved by muscular power — human, usually, but equine when the loads were exceptionally heavy. The cars have been developed from heavy, hard-running conveyances to modern affairs, sometimes with roller bearings, and various types of "locomotives" have been built to haul the cars in trains, handling weights that otherwise would be im-



AUTOMATIC "LOCOMOTIVE"

practicable. While steam, gasolene, compressed air, trolley systems and cables alll have been employed, these systems have disadvantages for certain classes of work that are eliminated in the compact, powerful battery rail tractor, an excellent example of which is manufactured by the Automatic Transportation Co., of Buffalo, and is shown in the accompanying illustration.

A notable feature of the machine is its diminutive size. Measuring over the draw-heads, or couplings, it is an inch short of six feet long, has a wheelbase of 28 inches and a gauge of from 20 to 36 inches, according to requirements; yet it is capable of hauling from 12 to 15 tons on trailers, on level track, and does its work with celerity.

As there is, of course, no steering gear, it is a comparatively simple matter to gear the motor to drive all four wheels, so that there is the best traction possible. The wheels are 18 inches in diameter. The storage battery from which current is drawn by the motor is carried in a box at one end of the "industrial engine," as the manufacturers call it, and at the other end is the controller and the hand-wheel which controls the brakes.

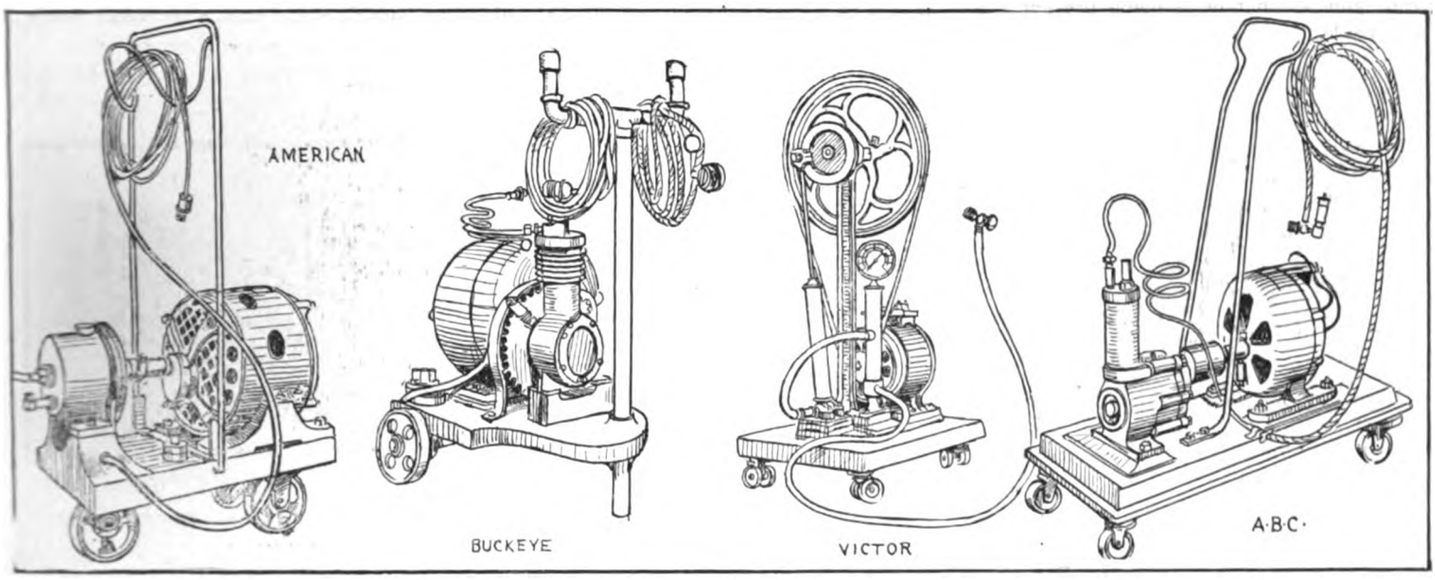
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POWER PUMPS ON WHEELS AS BUSINESS BUILDERS

Advantages of Portable Garage Compressors and Their Appeal to the Private Owner—Some Simple Types Suitable for Average Use—Principles of Pneumatics Outlined—One- and Two-Stage Pumps Contrasted.

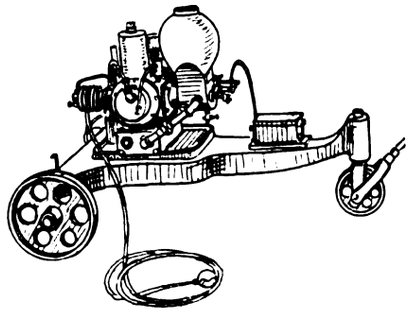
Air, according to the Standard dictionary, is "the mixture of gases that forms the blue envelope of the earth"—which is decidedly picturesque even if it is not very elucidating. To the motorist, air is all that the dictionary says it is and a whole lot more; it is his salvation; it has made possible the automobile. Without it between him and the roads over which he travels there would be no occasion to eulogize John Boyd Dunlop who, as every one knows, first put it into tires. And it has been leaking out of tires ever since.

Air is a very peculiar substance, and it has a lot of funny characteristics that seldom are brought to the attention of the average person not given to delving into the science of pneumatics. It is a perfectly elastic gas, for instance, which means that its volume decreases in proportion to the pressure under which it is placed, provided the temperature is maintained constant. But the higher the pressure becomes the greater increases the temperature. Which accounts for a measure for the heating of the barrel of a hand pump during the process of tire inflation. Part of the temperature rise is due to the friction of the plunger within the cylinder and part is due to the natural increase in temperature due to compression. It is because of this temperature rise under pressure that the Diesel engine is possible. In it the air is compressed until it becomes hot enough to ignite the fuel which is injected into the cylinder. Hence, for continuously operating air compressors some means must be provided to dissipate this heat and for this purpose both air cooling by means of flanges on the cylinders and water cooling with water jackets is used.



FOUR SIMPLE TYPES OF ELECTRICALLY-DRIVEN PORTABLE GARAGE AIR COMPRESSORS

But to get back to air itself—it has another disconcerting peculiarity that even Dunlop discovered when he built his first



UNIVERSAL "GAS" PUMP

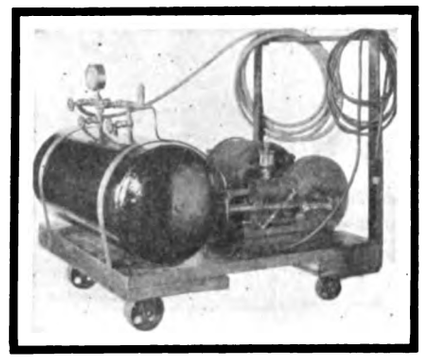
tire some 26 years ago. It leaks through the rubber of which tires are made, and the reason it leaks through is because it is not possible to eliminate porosity. The air may take months and months to leak out of a tube—some truly wonderful records have been made by tourists—but in the end it will leak out. The leak is no fault of the tires; it is a fault of the rubber, but it need cause no one any misgivings, for the leak in any case—unless the tubes are very bad—is tiny and practically is of no account. The fact remains, however, that the air actually does leak out through the pores of the rubber, so to speak, and this accounts for tires that seem flatter than usual after considerable use, even though their valves are O. K., and that have not been punctured. Incidentally, it has been demonstrated that carbonic acid gas, which is used to considerable extent for inflating tires, passes through the rubber quite a little bit more quickly than does air and consequently tires inflated with it require attention more frequently than do those that hold only pure air, as did the original Dunlop tires.

It is perfectly plain, of course, that every bit of air that leaks out of a tire must be replaced eventually, and the sooner it is replaced the better it will be for the tires, for, as has been pointed out so many times, there is nothing that destroys tires more quickly, or with more certainly, than does under-inflation. Billy Rea, whose story was told two weeks ago in Motor World, re-

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alized that fact and he made capital out of it; he has never rued the bargain.

Just as surely as the air must be replaced in the tires, just so surely does the problem of its replacement face the owner of the car; either he must use his hand pump and plenty of "elbow grease," unless his car is equipped with a power pump, or he must make arrangements to keep his car in the garage of some up-to-date proprietor who is alive to the possibilities of his business and who has the business acumen to instal some sort of a compressing plant. It is doubtful if any one really enjoys pumping up a 36 x 4½-inch tire by hand; it is a long, tedious proceeding that is calculated to take the starch out of a person even in cool weather; in hot weather it is nothing short of exhausting. Ergo: it stands to reason that the garage proprietor who caters to the interests of his customers to the extent of providing a power garage pump for their use is bound to attract trade to his door.

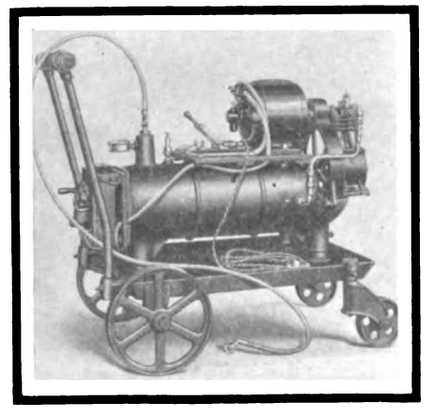


BASTIAN TWO-STAGE PUMP

Where Electricity Steps in.

With a small compressor, like the one Billy Rea put in his garage, for instance, it is a comparatively simple matter to lead a pipe from the pump, or from the storage tank, if one is used, to a central place in the garage where it is accessible to all. This necessitates that in the case of tire replacements, the work be done in the garage, where valuable space may be occupied by the car under repair prior to the inflation of the new tire. To obviate this difficulty, and also to provide a convenience for touring transients, several garage owners have laid pipe lines to some point outside the building, either at the garage door or still further away at the curbing, the hose connection frequently being housed in a small box.

This method has the objection, however, that it is not always easy to keep a long pipe line tight; if the pipe line is rubber tubing, it will disintegrate in time and leak, and if it is metal it will be prone to collect accumulations of moisture at any low points. This moisture, of course, then will be blown into the tires, and no one need to be told that nothing but clean, dry air ever should be pumped into a tube. Nothing remains, therefore, but to adopt some sort of a portable compressor that can be moved about from place to place in the garage or taken out onto the street or roadway, if necessary, for temporar yservice.

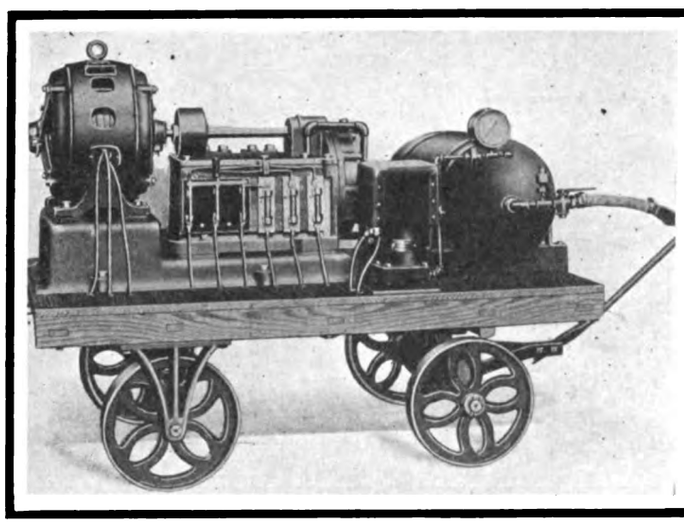


MIMIMAX PUMPING PLANT

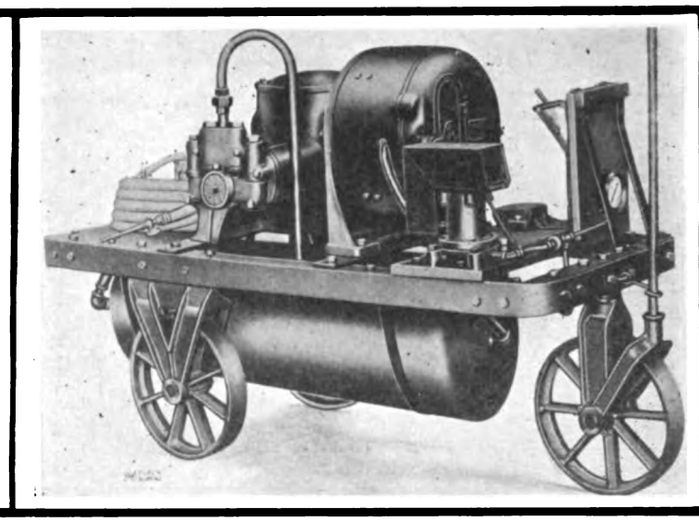
Electricity, of course, suggests an immediate solution of the problem, and the variety that obtains in the construction of portable electric compressors is very nearly as great as the variety in small single and twin-cylinder pumps of the types illustrated and described in the last two issues of Motor World. Several types of compressors, suitable for the average garage, operating on gasolene, also are made, though the majority of manufacturers prefer to drive their pumps by electricity as suggesting at once the simplest kind of mechanism requiring the least of care.

Light and Compact Construction.

Of all the various portable air compressors designed for garage use, the Victor, which is produced by the Victor Electric Co., of Chicago, Ill., and which is illustratel herewith in the accompanying plate, probably is the simplest; certainly it is the lightest, and for this reason it is well adapted for use in the small private garage as well, for it takes up the very minimum amount of space. As may be seen by the picture, the pump itself is scarcely more than the usual hand-operated cylinder, though it is more ruggedly constructed, of course, and special attention has been paid to the valves with the view of making them as accessible as possible; both are of the ball type. The plunger is connected to the large wheel, which, in turn, is driven from a pulley on the motor shaft by means of a small, round belt. The second cylinder is nothing more than a small reservoir which collects moisture or oil and prevents it entering the tire; it is fitted with a drain cock. As the motor can be wound to operate on any kind of a lighting circuit—either alternating or direct current—and for any voltage, the pump is applicable anywhere current is available.



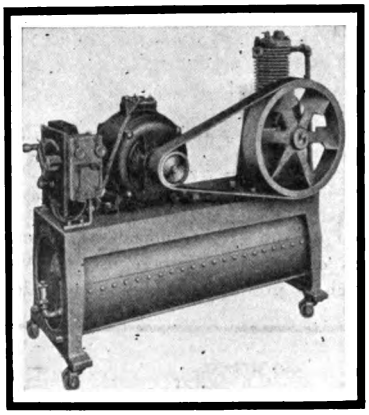
ALLIS-CHALMERS HEAVY DUTY OUTFIT



GENERAL ELECTRIC WITH UNDERHUNG TANK

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The Ingersoll-Rand compressor, produced by the Ingersoll-Rand Co., of 11 Broadway, New York City, and illustrated on another page, scarcely is any more complicated than is the Victor, though the



CURTIS GARAGE APPARATUS

design is entirely different; the picture shows quite clearly its method of application and its size, as compared with the average touring car. It weighs only 75 pounds and measures just 23 inches in height. The small single-cylinder compressor (air-cooled) is direct connected to a one-half horsepower motor operating at 1,700 revolutions a minute, and as an indication of its capacity, it is pointed out that it will pump up a 35 x 4-inch tire from flat to 70 pounds pressure in three minutes. Obviously, its range of action is only limited by the length of the wires leading to the motor; the machine is supplied complete with hose and pressure gauge, switch and wiring and will operate on either direct or alternating current.

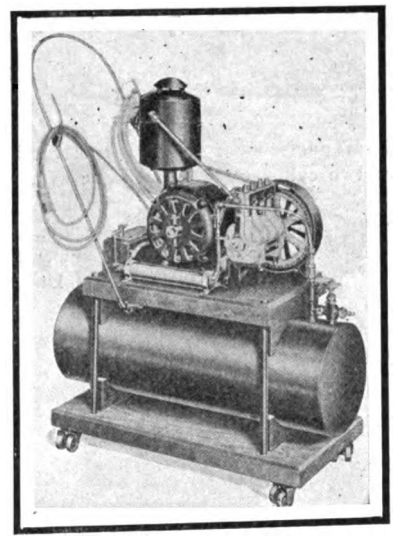
Tires Inflated in Three Minutes.

The Buckeye compressor, made by the Central Brass & Fixture Co., of Springfield, Ohio, is not unlike the Ingersoll-Rand in size and general appearance, though there is an important difference in the drive. The Ingersoll-Rand pump is direct connected, whereas the Buckeye is connected through the intermediary of gearing; the motor is rated at one-third horsepower and operates at 1,750 r.p.m., at which speed the compressor is calculated to inflate an ordinary tire in something under three minutes. The net weight of the whole apparatus is 60 pounds and, as is the case with all the electrically operated pumps illustrated, either alternating or direct current can be used with equal success.

The American electric pump, which is manufactured by the American Electric Air Pump Co., of Pittsburgh, Pa., is another that is remarkably small, considering the amount of work it does and saves. It differs from all of the others in that the pump portion is of the rotary type, as is made plain by the picture; it is direct connected to a one-half horsepower motor and will fully inflate a normal size tire in from one to three minutes. Owing to the fact that the pump is of the rotary type there are no valves and the operation of the apparatus is unusually quiet. Equipment includes 10 feet of extension cord to be attached to any convenient lamp socket, 10 feet of heavy air hose and an Acorn coupling.

Gasolene Motor Operates Pump.

Of course, where electricity is not available, though there are few garages where electric lights are not used, an electric compressor cannot be used, and to fill this discrepancy there has been developed the gasolene engine driven type of compressor



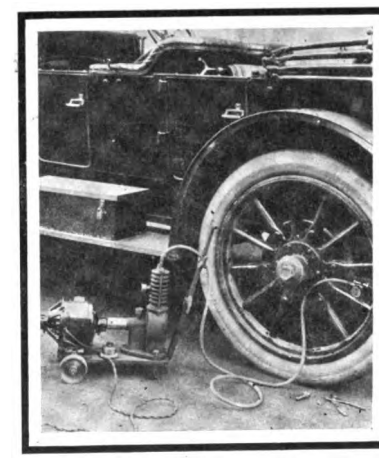
KELLOGG FOUR-CYLINDER PUMP

of which the O-B, produced by the Universal Mfg. Co., of Minneapolis, Minn., is a representative example. The plant, as illustrated, is complete within itself and gasolene engine direct connected to a sin- consists of 1½-horsepower water-cooled gle-cylinder air-cooled pump of the usual reciprocating variety. These two elements form a unit which is mounted on a substantial iron frame carried on three wheels; a wheel lock is provided to prevent the machine "working away" while in use. The engine cylinder is water-cooled by means of a large reservoir cast integral with the cylinder, circulation being carried on by thermo-siphonic action; the gasolene tank also is mounted on the engine and the ignition coil is located further aft on the supporting frame. In order to obviate intermittancy, the air from the pump cylinder is passed first into a pulsating chamber which also serves to collect moisture and to prevent it from being forced into the tire. Pressure up to 250 pounds to the square inch can be obtained, and the pump will inflate the ordinary tire in less than two minutes. The O-B outfit, of course, is portable in the fullest sense of the word, for it is not dependent upon electricity and can be operated anywhere gasolene can be obtained. The shipping weight of the whole outfit is 250 pounds, and is over-all dimensions are 36 x 28 x 27 inches.

All of the compressors described are of the type designed to be connected directly to the tire with the compressor operating, there being no provision made for storing air under pressure for use outside the radius of the electric wiring connecting the source of current and the motor; as such, they are all small and compact, of course, and require the minimum of space when stored. For temporary use at a distance from the source of current, as, for instance, across the street from a garage where a new tire has been put on a wheel, some provision for the storing of air is necessary, and this also is necessary where the air is used for brazing or for operating pneumatic tools, a secondary use for such apparatus that has been found profitable by a great many garage owners.

Motors Mounted on Tops of Tanks.

In devices of the kind provided with a reservoir, the motor and compressor almost invariably are mounted on top of the tank in order to save space. In the Curtis, which is made by the Curtis & Co. Mfg. Co., of St. Louis, Mo., for instance, the tank is contained in a substantial framework, atop of



INGERSOLL-RAND OUTFIT

which is mounted the electric motor and starting rheostat and the single-cylinder vertical compressor. The compressor is of the air-cooled type, there being fan blades in place of the usual flywheel spokes, and it is belted to the driving motor

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through the intermediary of a wide, flat belt. The whole apparatus is mounted on universal castors and can be connected to any convenient lamp socket. In this respect it should be remembered that it is a great deal simpler to run wires to the curbing for the connection of a compressor motor than it is to run a pipe line from the compressor to the curb. The Curtis outfit, in common with most of the others, is fitted with an automatic unloading device which obviates the possibility of the tank being filled to the danger point.

Operative Cost Few Cents a Day.

In the Minimax compressor produced by Herz & Co., of New York City, the electric motor only is mounted on top of the tank, the compressor being located at the end of the tank on a special bracket made for its reception. The motor is rated at one-quarter horsepower and is connected to the compressor, which is of the two-cylinder air-cooled type, through the intermediary of gearing which permits the motor to operate at its most efficient speed; the starting switch, as may be seen in the picture, is mounted on top of the tank and the rheostat is mounted at the end. The upper portion of the truck is formed like a tray to receive the wiring and the hose and to serve as a handy receptacle for small tools, etc., used in replacing tires. Owing to the small size of the motor, the cost of operating the pump, it is pointed out by the manufacturers, is not more than a few cents a day. The weight of the outfit is 260 pounds and the overall dimensions are 32 x 35 x 20 inches.

Two-Stage Compressors Defined.

Both the Allis-Chalmers and the General Electric pumps illustrated herewith are for rather heavier duty than are any of the others, which fact is made plain by the pictures which show rugged construction and large capacity. The former is made by the Allis-Chalmers Co., of Milwaukee, Wis., and the latter is produced by the General Electric Co., of Schenectady, N. Y. Both employ twin-cylinder completely enclosed compressors and in both the drive is transmitted through gearing. The Allis-Chalmers outfit is mounted on a wooden frame carried on four wheels, the storage tank being above the frame, whereas in the General Electric outfit the framework is of steel and the tank is slung beneath it where it is out of the way and occupies space that otherwise would be wasted. The former is equipped with an automatic unloading device which cuts out the compressor immediately the pressure reaches a predetermined figure and the latter has an automatic switch which operates in much the same manner.

Air compressors of the type described, and for use where high pressures are not required, generally are of the single stage type. Which is to say, either a single cylinder is employed and it pumps the air direct into the tire or the container, or where two or more cylinders are used each pumps directly. Where higher pressures are required or it is desired to reduce the power needed to operate the pump, the two stage principle is employed, though it is by no means general for small outfits. The two stage pump differs from the single stage pump in that the former must have at least two cylinders, one of which exhausts into the other. The air that is compressed in the first cylinder therefore is transferred to the second cylinder, where its pressure is raised still higher and finally reaches the tank or the tire, as the case may be.

High and Low Pressure Cylinders.

In the Bastian garage outfit illustrated herewith—it is made by the General Utility Co., of Philadelphia, Pa.—this two stage principle has been adopted, and the resultant pump is of unusual construction. The two cylinders are placed one over the other, the low pressure cylinder being at the top, and the two pistons are interconnected and so arranged that the upper one is discharging while the lower is taking its charge. On the ensuing stroke, the air under pressure in the smaller cylinder is transferred to the storage tank. The electric motor is geared to the compressor, which, with the storage tank, is mounted on a substantial wooden platform which, in turn, is mounted on wheels. Two hundred pounds pressure is obtained quite easily, though obviously not more than 100 ever is needed for inflating tires. Equipment includes a safety valve, a gauge, 20 feet of air hose and 20 feet of electric cable.

Automatic Air Release Protects Motor.

The Kellogg outfit, which is manufactured by the Kellogg Mfg. Co., of Rochester, N. Y., bears the distinction of being the only four-cylinder pump of its kind on the market. The pump itself is unusually small and compact and except that its cylinders are water-cooled to permit of heavy duty, it is the Standard Kellogg pump that has become so familiar because of its widespread adoption for automobile use. Only the heads of the pump cylinders are water-jacketed, the water circulating from the tank around the cylinder and back to the tank on the thermo-siphon principle. The capacity of the pump is 200 pounds pressure to the square inch, and a simple automatic air release switch, to permit the motor to attain full speed before the load is placed upon it, is fitted as a precaution against the blowing out of line fuses. The particular advantage of any system of the kind in which a storage tank is used is that the tank can be filled by connecting the motor to any convenient lamp socket after which the whole outfit can be moved close to a car, thus obviating the necessity for moving the car on a flat tire and damaging it. Where the storage tank is not needed, the Kellogg outfit is supplied without it.

Care Needed in Selecting Pumps.

In purchasing garage air compressors operated by electricity, great care must be taken to determine accurately the kind of current used for the lighting circuit—whether alternating and the number of cycles or direct—and the voltage, for an alternating current motor will not operate on direct current or vice versa. Similarly, care must be taken to ascertain the exact voltage. A 110-volt motor, for instance, will heat badly on 90 volts and will burn itself up on 220 volts. As a general rule the company that supplies the electricity for lighting will be glad to give any one the necessary data, and this should be obtained.

Marvels of Modern High-Speed Steel.

To one who has used lathe tools of ordinary tool steel the working of modern high-speed steel is nothing short of marvellous. The lathe working with high-speed tools is speeded up and the tool forced to its work until it actually attains a dull red heat, sometimes, and yet it does not lose its hardness or its cutting edge. The chips and shavings come off the work blue from the intense heat. While the scientific reason for the indifference of the modern tool steel to heat is encrusted with chemical formulas, the effect that is brought about in making the steel is to require high temperatures to affect it in everything that is done to it. In the blacksmith shop the steel must be brought to much higher temperature for forging and also for hardening and tempering than ordinary steel; if these operations are attempted while the steel is at temperatures that would be proper for working ordinary tool steel, the results would be the same as if an attempt was made to work the common steel at very low heats. So far as effects are concerned, high-speed steel is cold until it gets bright red hot—which is a paradoxical statement that just about covers the ground.

How Benzol Affects Some Carburetters.

Benzol has been found to affect the adjustment of carburetters having cork floats by dissolving the shellac coating from the cork and allowing the float to become soaked and heavy. If benzol is used in such a carburetter, some such trouble should be looked for.

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24 CARS READY TO START IN TOUR TO GLACIER PARK

Ninth National Reliability Tour to Have Hotel Train, with Repair-Shop and Daily Paper — Itinerary and Starters.

It looks very much as if a team of light cars would win the Glidden team trophy in the ninth National Reliability Tour of the American Automobile Association which follows, the city from which the entrant hails being sandwiched between the entrant's name and the car he will drive—or ride in:

L. W. Hill, St. Paul (Packard); L. H. Fawkes, Minneapolis (Premier); Harry F. Legg, Minneapolis (Stutz); L. H. Fawkes, Minneapolis (Marmon); G. H. Voter, Boston (Metz); Charles Metz, Waltham, Mass. (Metz); G. W. Walter Metz, Waltham, Mass. (Metz); Northwestern Automobile Co., Minneapolis (Krit); Northwestern Automobile Co., Minneapolis (Krit); Northwestern Automobile Co., Minneapolis (Krit); Dr. A. C. Smith, Devil's Lake, N. D. (Kissel); L. C. Erbes, Merriam Park (Velie); R. W. Munzer, Minneapolis (Hupmobile); R. W. Munzer, Minneapolis (Hupmobile); R. W. Munzer, Minneapolis (Hupmobile); J. O'Brien, Minneapolis (Moon); E. B. Stimson, Minneapolis (Little); Dr. E. W. Humphreys, Moorhead (Chalmers); Lewis C. Newlon, Fairmont, N. D. (Maxwell); E. A. Everitt, Waseca, Minn. (Locomobile); F. J. Flynn, Minot (Chalmers); Dr. J. R. Pence, Minot (Ford); Miss Minnie Butchard, Hibbing, Minn. (Velie); Dr. J. D. Park.

leads for the most part over roads that are entitled to the designation; the heart "rendering," as some one has said, stretches that were encountered by those hardy individuals who made the trip from New York City to Jacksonville, Fla., two years ago, may be remembered, but it is promised that nothing like them will be encountered, though that part of the Northwest never was famous for the goodness of its roads. And though the total mileage is nearly as great as it was on that memorable trip, it has been split up into what some persons consider fairly easy jaunts. The longest



SCENIC AUTOMOBILE HIGHWAY THROUGH VIRGIN FOREST IN GLACIER NATIONAL PARK

scheduel to start from Minneapolis, Wednesday, to-morrow, Friday, and which will end up eight days later at Glacier Park, Wash. For there are only three teams entered so far, and they are all of them made up of the lightest of light cars; one of them is a team of Metz cars, one is a team of motorcycles, and the other is a team of Hupmobiles. As was the case two years ago, the tour is to be run under Class E, Grade IV., touring rules and, unlike last year's abandoned event, 24 participants actually have "signed up" and it is altogether likely that all of them will start.

According to the latest reports from the entry list which can be taken to mean Minneapolis, the complete list of entries is as

If all of the 24 start, it is logical to assume that nearly 100 per cent. of them will finish, for the route that has been selected

single day's trip will be 194.6 miles—between Fargo and Devil's Lake—and the shortest will be 124 miles—leading into Fargo from Alexandria on the other side. The complete itinerary with the night stops and mileages, is as follows:

July.	City.	Miles.
11	Alexandria, Minn.	144.4
12	Fargo, N. D.	123.8
13	At Fargo, N. D.	
14	Devil's Lake, N. D.	194.6
15	Minot, N. D.	135.6
16	Williston, N. D.	136.8
17	Glasgow, Mont.	163.8
18	Havre, Mont.	156.1
19	Glacier Park, Mont.	178.0
	Total	1,233.1

In marked contrast to the tour of two years ago, when the tourists were left pret-

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ty much to themselves to get hotel accommodations at the various night controls—and were lucky if they got a bath—comfort will be the keynote of this year's jaunt, thanks to the active interest of Louis W. Hill, chairman of the Great Northern Railroad's board of directors, who himself has entered a car in the contest. No one will be at the mercy of first-, second- or third-rate hostelries; the hostilry is going right along with the tour. It is a special 12-car train of Pullman cars, with the accent on the "pull" in the form of a giant Mogul locomotive. In that train there will be berths for all who want 'em—at $1.50 per; also, three square meals a day will be served, and for those who meet with difficulties by the wayside there will be a repair shop on wheels that will be complete even to a medium-sized welding plant and forge. The popular stunt of printing a daily paper en route has been "crabbed," too, and the "Glacier Park Blazer," as the sheet is to be styled, will appear nine times before it flickers out of existence.

In the matter of entertainment, the "Twin City-Glacier Park" tour, which is its other name, will require no apology. All along the route preparations have been made by civic bodies and boards of trade and automobile clubs for "stunts" that are practically certain to get their respective names in the "Glacier Park Blazer." And—s-h-h!—arrangements have been made to illuminate the murky heights of the marvelous Rocky Mountains for the edification of the jaded tourists. The Aurora Borealis will not be used for the purpose.

As usual, entrants have been recruited from among amateurs and professionals alike: and any car is eligible and has a perfectly good chance to win either the National Touring Trophy for driving the touring car that completes the distance with the least number of black marks—they will be dealt out only for time lost on the road—or the Anderson trophy, for driving a roadster home with the cleanest score. Besides, there is the Glidden trophy for the team that makes the best score, and there are individual prizes for those who head the various divisions, according to the A. A. A. price classification scheme.

Declares Ban on "Automobile Masher."

If the "automobile masher" is to operate with any degree of safety in Detroit hereafter, he will have to be unusually careful, for this type of car-operating individual has been recognized by the police department and a squad of motorcycle patrolmen is on the trail. If the term is at all vague it may be stated that this is the name Police Commissioner Gillespie has applied to men who "creep along the curbs in their cars and try to pick up girls."

NEW JERSEY MAKES RECORD FOR FREAKISH ACCIDENTS

Car Climbs Into Porch and Sets House on Fire—Driver Blinded by Paper Souvenirs Crashes Into Culvert.

The State of New Jersey already has a reputation for producing freak insects and legislation, but now it has come into the limelight as a producer of freak accidents, two having occurred last week on the same day; both, of course, were automobile accidents, and the results of one were more or less serious.

D. T. Oakley, of 77 Day street, Orange, was driving through Red Bank with his wife and three daughters when the tourists passed a stage coach loaded with employes of a factory who were scattering small paper shields to advertise their outing; the shields, fluttering down into the front compartment, blinded Oakley, who collided with a culvert, threw his wife against a telegraph pole and otherwise bruised and injured the others in the party.

The "freakiest" of the list, however, is that in which a party of motorists set on fire the residence of Morris Liptak, of Athenia, near Passaic. Liptak was slumbering peacefully in the early morning when the tourists approached at high speed; for some not stated reason the car left the road, crashed into Liptak's front porch, the gasolene tank sprung a leak, the gasolene caught fire, the fire attacked the front porch and before the situation was in hand several hundred dollars' damage had been done to the house. After volunteer firemen had extinguished the blaze and the car had been repaired so it would run, the motorists promises to send Liptak a check to indemnify him for the damage done, and drove on.

Negro Napoleon's Stunt Leads to Jail.

"Stunts" by colored chauffeurs do not seem popular in Nashville, Tenn., especially when they are of the type pulled off one day last week by 17-year-old Napoleon Haley, and Napoleon, too, is convinced by this time that perhaps he merited the treatment he received rather than the applause he expected and sought. He was arrested on a charge of reckless driving, although Napoleon can't figure out why that should be, since he didn't drive the car at all.

Napoleon conceived the grand idea of this "stunt" while he was about to start his employer's car on 8th avenue, near Broadway, and he no sooner thought of it than he set out to put it into execution.

He reached over into the front compartment, gave the car a little "gas," put the gears in mesh, turned on the engine started and then, while the car rolled down the street Napolean proceeded to light a cigarette. After the cigarette was lighted and the car had secured quite a start Napoleon proceeded to demonstrate his ability as a sprinter and started after the car. He caught it—but a "copper" caught Napoleon, too.

The police stated that had the car gone a few feet further it would have been beyond the powers of Napoleon to catch it and that it undoubtedly would have done considerable damage. Napoleon, like his historical namesake, had a lofty ambition but he took some tumbles and still is in a dazed state of mind as a consequence of his rapid downfall.

Iowa Tag Situation to be Tested.

Does the verbal permission of the secretary of State give a man the right to operate his car without a license tag? is a question which is agitating a part of the State of Iowa and has resolved itself into a test case wherein O. C. Stubbs, a travelling man, of Iowa Falls, Iowa, is the "tester." Motorists in that section of the country are watching the matter with interest, as Stubbs's case so nearly parallels what is quite likely to happen in any State in the Union.

While in Des Moines one day last week Stubbs bought an automobile and immedipately applied for a license tag, but was informed by the clerks in the secretary of State's office that no tags were available and that he could run his car home without one; Stubbs took the official's word and started and had nearly reached his residence when the chief of police of his home town arrested him for operating the car without a license. Stubbs protested, but to no avail, and it has now been decided to secure judicial light upon the extremely vexing question.

Detroit Turns Tables on Traffic "Cops."

Not contest with being watched by the police, the Wolverine Automobile Club, of Detroit, has set out to watch the guardians of the law, and as a first move in this direction has empowered President Charles A. Pfeffer to name a committee of ten to do this work. The move is not wholly on the club's initiative, for the police commissioner has asked that it be done, and with a view to making the department more efficient in its traffic work. The committee will watch the traffic police, ascertain how they perform their duties, suggest remedial legislation and report infractions of police rules to headquarters, all for the good of the community and the betterment of the service.

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LOST ILLUSIONS OF A MOTOR TRUCK AGENT

What Happened When a Seeker for "Business Opportunities" Broke Into the Commercial Vehicle Trade—Skeptical Prospective Purchasers Who Needed Much Convincing—Door to Success Has Narrow Opening.

"Pretty nice business," remarked the Innocent Bystander, as he stood on the freight platform and watched the freight-shed huskies unload half a dozen clean, bright, new motor trucks and roll them into an imposing row to await the arrival of the dealer's men. "A fellow goes out and gets a few orders, transmits them to the factory and along come the trucks, which are turned over to the owners while the dealer adds his pocket with a fat little commission. Nice, clean business!"

More Rocks than Roses in the Path.

Maybe it looks that way. Maybe there are dealers who breeze through their work in a style that almost approximates what the Innocent Bystander figured that it ought to. But if so they keep well under cover. They don't advertise their troubles, as a rule, but there are few who are not aware of the fact that a dealer's path is not carpeted a foot deep with American Beauties. It is not noticeably stretching the truth to say that the average dealer feels pretty well satisfied with the way things are going if the rocks in the road are not too big and jagged to be climbed over.

It was not very far in the past that the man who used to be an Innocent Bystander, but isn't any longer, found out these things and more, too. He was looking around for some "nice, clean business" to occupy his mind and his time and keep his money working, and he permitted his roving eye to hover approvingly on the commercial vehicle industry. To make a short story short, he got an agency, an office and a couple of men and, after providing a place to store commissions, set to work to accumulate orders.

Hard Pushing to Start Ball Rolling.

He had no demonstrating truck. The advantages of the machine he represented were so obvious and so far superior to all others that it didn't seem necessary. Besides, if anyone wanted to see a truck they could just as well wait a bit until the first few were delivered and then see them actually doing regular work. And the factory people agreed that this idea was surely all right. What good does it do, they argued through two closely written pages, for a man to see a machine doing stunts around the street? He wants to see a machine at work, not just "showing off." Certainly; get an order, get the truck in service and get the owner to let the prospects come and look at it and ride on it, if they want to. With our trucks, they concluded, this ought to be sufficient for anyone.

Somehow the prospects that had been lined up, figuratively, before real work was commenced, seemed to lose much of their interest when it came to asking them to sign an order and a check in exchange for a comprehensive course in catalogues. They admitted that doubtless the striking advantages of the machine were actual and workable; but those other fellows who also wanted to sell trucks smiled loftily and, in a few well-chosen sentences, shattered the theories so confidently put forward. The prospect would argue that he was no engineer, and that for all he could see both fellows were telling the truth and both were right in their conclusions. They both knew more than he did about their own machines, and who was he, that he should contradict either of them?

Things that Competitive Salesmen Did.

This sort of thing exasperated the agent, who had the utmost faith in his machine—even though he never had seen one that was less than a couple of years old—and he began to reflect a little bitterly on the very ungentlemanly conduct of some of his competitors. There was no particular reason why they should take the pains they did to dig up theoretical objections to his truck—except that the prospect usually wasn't in a position to contradict them, even if he wanted to. And there was even less excuse for the concerns that supplied their salesmen with neatly arranged lists of dissatisfied owners of trucks, so that even if the salesmen so armed couldn't make sales themselves they often could spoil sales for someone else. And they did, too. And they seemed to have no sporting instincts at all, for they refused absolutely to give the would-be factor in the business a single chance to get a foothold, if they could prevent it.

Altogether, the rosy hues that at first were so plainly visible began to fade a bit, and there were times when the agent was not sure that the color was not a dull brown. So one day when a prospect got to the point of signing an order and paying his deposit—even though he put it up to the agent good and hard in the matter of fixing things that might happen after the truck got to work—there was general rejoicing and the sunshine once more was bright and the world a good place to live in. With a machine to show just what it could do, all this knocking business would be put a stop to, and there would be business doing.

Planned a Party for His Prospects.

As the agency force was familiar with the machine only in a theoretical way, the factory agreed to send down a man with the first car and give it a real good start. The man came down a day or two ahead of the machine—an intelligent, practical man who knew his business. The arrival of the truck was to be made a sort of gala occasion. The agent, who really had succeeded in deeply interesting a number of prospects, arranged to invite them to the unloading of the truck, so that they could see the machine just as it came from the factory and could, if they chose, ride back to the office on it and observe its advantages to some extent. It would be a good scheme to get a little bunch of really interested ones together; they would, of course, talk about the machine, and probably get to boosting it among themselves, and get up a little enthusiasm of their own accord, which they would carry away with them.

Factory Man Calls it all off.

The stenographer was getting ready a batch of gracefully worded letters of invitation to the unloading, to be followed by a little snack, when the unfeeling factory man put the kibosh on the whole thing. How did anyone know what sort of shape the machine would be in when it arrived? How could anyone know that the fool factory wouldn't send it without a carburetter, or something equally embarrassing? Who could tell what might happen to the car on the road? In fact, when the factory man got through the agent forgot his projected celebration and began to pray for a whole, undamaged truck.

The agent lived to thank the factory fel-

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low, and he didn't have to live very long for that particular purpose. On the day when the truck should have arrived came a telegram stating that it had been impossible to get an end door car, but that one would be placed next day without fail. And about a week later the truck actually was shipped. It was delayed in transit and took a week to make a two days' journey. By the time the railroad people came up with the notice of arrival the agent was just beginning to wonder how a poor devil could live through the delivery of a dozen trucks, if a single, lone machine was capable of making so much trouble. He learned the answer later.

Another Exhibition of Foresight.

The factory man got on the job bright and early and found, first, that someone, probably a railroad employee, had turned the dual ignition switch to the battery side, and the good old battery had been industriously discharging through the coil, which was nice and hot when the experienced factory man felt of it, as he was in the habit of doing to see if the factory people followed the strict order to disconnect one battery terminal on all shipments. The motor was too big and too new to spin and start on the magneto, so there was a good, long delay while someone chased across town and got a new set of dry cells. But the time did not hang heavily, for one of the brakes was disconnected, a couple of steering gear pins were without split-pins and on the verge of falling out, the gasolene pipe was full of dirt and one of the petcocks on the engine was wide open and the handle broken off short. The factory man attended to all these and several other things philosophically and quite as if they were in the regular program—which they were, more or less.

The wily factory man insisted on running the machine around without load for a day before putting it to work, and about every half hour he stopped to fix something—that is, during the early part of the day. Towards evening the troubles all seemed to have come to the surface, and the machine, which really was a fine one, behaved the way it was intended to behave.

Pious Hopes of Horse Drivers.

The following day the truck went to work. As the agent expressed it, "apart from the fact that the machine was put into an open-ended shed with a leaky roof, muddy floor and sagging walls, with no one to look after it but the stable men who 'hoped it would bust' because it seemed to threaten their jobs, and the gasolene supply station half a mile away, and apart from the fact that every night something was stolen off the machine until there wasn't a tool left and it even looked as if attempts had been made to 'lift' the engine, the machine was well provided for." It was the first motor truck that had been introduced in a business that had been using horses for 50 years, and used a lot of them. Almost without exception the drivers, the stablemen, the foremen and the office force were antagonistic—when no one was looking.

When the agent or his people, or the "boss" from the main office, was around, they were suspiciously loud in their praises of the machine, with occasional profound regrets at unavoidable delays, blockades and so on. Anyway, between them, and in spite of the fact that the factory man stayed with the machine for a week, the showing made was decidedly poor, and it was only by producing a minutely itemized record of loading, unloading, running and delay times that the agent was able to show that the fault was somewhere else than in the machine. He worked a whole day to get his report in shape, and wrote a masterly letter, analyzing it and showing clearly just what the truck could do if it had a chance. Next day he appeared before the "big boss" with the documents, and laid out his facts in convincing array.

Gilded Palace for the Machine.

The new owner of the truck rubbed his chin thoughtfully. "H'm!" he said, with a light in his eye that the agent thought boded ill for the miscreants who dared to impede the machine. But he was wrong. "H'm! Just what I thought. The motor truck isn't ready yet for such service as ours. Well, if you've got to have a Brussels carpet under your machine and a stained glass roof over it, and a squad of policemen to watch it, I suppose I'll have to provide them, as long as I've paid for the thing." And the "boss" went to work and filled in the end of the shed, covered the roof with paper and tar, put some old planks on the floor and found an ancient stable padlock for the door.

But ultimately things really did get better and the truck made good to such an extent that it was followed by three more, all housed in a real garage with a real mechanic to look after them. Nevertheless, the dealer did not succeed in reaching the point where the path was rose-strewn. Certain peculiarities of his car, which were his talking points, induced his competitors to call the machine a "freak," and this caused the agent much sorrow and some loss of business. And queer things kept happening.

For instance, a big contractor, who had been the firing-point for truck dealers for several months, finally arose in wrath and invited all the salesmen to get together in his office and fight it out among themselves while he sat by and listened. And they did. It was certainly a grand scrap and as the sale hung on a point that was covered by the agent's machine better than any of the others, things looked rosy. One dealer, after failing to throw down the arguments in favor of the "freak," arose in disgust and told the prospect that if he wanted to experiment with fantastic junk-piles it was his own funeral, and walked out. But the agent for the "freak" was recalled as the whole party was leaving and, being asked for prices, terms and a lot of other information, naturally felt that he had about made the sale.

He hadn't. For some reason the prospect did not buy that or any other truck, and to this day he is still using horses. Why, no one seems to know. But it is supposed that the almost universal chorus of knocks brought the conviction that none of the machines were much good if they were open to so much criticism.

In the end, the long, hard fight the agent made brought about a very fair measure of success, and the time came when he even laughed at his own early experiences. But long before that period was reached he had found out that the "nice, clean business" was—well, one couldn't say it wasn't a nice business, and for the most part it was a clean business, but it was not what he thought it was when he first used the expression, standing on the freight platform.

Useful Tool for Irregular Cutting.

A tool which is extremely useful for cutting irregular forms from thin sheet metal, gasket material, paper and the like can be made like the well known glass-cutter with a sharp-edged little wheel. The cutter wheel, however, should have a diameter of about three-eighths or half an inch and should be mounted in a good, heavy handle, on a heavy spindle, so that it will stand considerable pressure. For the wheel a small knurling tool blank answers very well. It should be thin, so that there will not be too much material to remove in forming the cutting edge. The edge may be formed by holding the disk against a grindstone or emery wheel in such a way that the edge is beveled, the disk rotating at the same time by friction with the stone or wheel. The angle should be about 35 degrees for general purposes. This will give a good, sharp edge but one that will not readily break or chip off.

Such a tool is very useful for following an outline previously marked off, or it may be used in following the edge of a template or pattern. It is easily kept running straight or in a uniform curve and, if well made and properly used, will leave a clean, smoothly cut edge.

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HOMELY PATCHWORK REPAIR PROLONGS OLD CAR'S LIFE

Broken Flanges that Were Clamped Together and Put Back to Work — Repairman Doctors His Own Car—How he Did it.

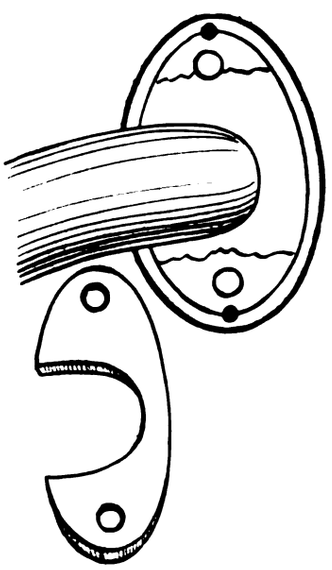
Old though the car was, and lacking in many of the refinements that mark more modern machines, Jimmie liked it for several reasons. One was that there was real good stuff in the old engine, and fine workmanship—and Jimmie knew, because he was a repairman of experience, and if there was a machine screw or a split-pin in that car that he hadn't examined at one time or another and mentally catalogued, it would be a long hunt to find it. Another reason was that Jimmie had had the machine for a long time and had become sort of attached to it, "like a barnacle," he said himself. And in the last place, Jimmie never could have possessed himself of a car of any kind as cheaply as he had bought his old "mill," for he had bought it while a blackened, fire-seared wreck from the insurance people for a mere ragtime, and had spent all his spare time for a whole winter in putting it in running order. True, the new tires nearly broke Jimmie; but by investing in "seconds" he managed to get his car on its feet. The whole thing was a succession of lucky chances, and Jimmie knew that if he let the car go he never could get one nearly so good at the price he could pay.

So as Jimmie was constrained to own that particular car or none at all, he did not even dream of running it off the end of a pier into the river when the two brackets that supported the long exhaust pipe and the muffler gave way, all unnoticed, and let the weight come on the flanged joint between the exhaust pipe and the exhaust manifold and on the manifold itself, breaking the exhaust pipe flange and one of the cylinder flanges of the manifold. New parts were out of the question, because they were out of existence, so far as Jimmie knew, and a new manifold—the bare thought of the expense of a pattern and casting made Jimmie shudder. So he went to work, in his spare time, and it was not very long before he was again on the road with a pound or two of added weight in the shape of repair wrinkles.

The cylinder flange was the one that bothered Jimmie the most, because it was a mean break—two breaks, in fact, as shown in the accompanying drawing, which was made with Jimmie's sketch on a piece of galvanized sheet iron as a basis. If the problem had been merely to hold the flange—what was left of it—against the cylinder, the job would have been a comparatively easy one; but the joint had to be gas-tight.

Jimmie sighed for the welding devices that were not within reach, and then, shaking off his regrets, reasoned it out. As he couldn't have a new flange made or the old one welded, the old one must be held together in some other way. There was no chance to put in screws or pins edgewise, so there seemed nothing to do but "tie the pieces together with a piece of iron," as Jimmie soliloquized. And, in the end, that is what he did.

The flange was just over three-eighths of an inch thick and the breaks were so irregular that the pieces easily found their proper places when pressed together. Jimmie got a piece of iron rod three-eighths



EXHAUST MANIFOLD REPAIR.

of an inch square, cut off a piece long enough to make a band all around the flange, shaped it carefully to the shape of the flange and got the ends welded together. The band was left rather small so that it had to be smoothed and trimmed to allow of its being forced in place around the flange. A hole was drilled in each end, half in the flange and half in the band, a tapered pin driven in each hole, until the band was drawn very tight and the broken pieces forced hard into their places. The pins were sawed off, leaving about a sixteenth of an inch at each end to be riveted over into slight countersinks and then filed off flush and smooth.

When the job had progressed thus far Jimmie liked the looks of it so much that he was tempted to bolt the manifold in place just as it was; but his cautious instincts prevailed, and he made sure that the parts would stay together when bolted up by cutting a piece of stiff steel 3/32 of an inch thick of the same shape and size as the flange plus the iron band, but with a cut-out to fit over the pipe. When the flange was bolted up with the iron band around the edge and the steel plate on top it could no more get away than it could talk. And while the job didn't look so dashed handsome, Jimmie said, it didn't look so all-fired bad either, and certainly it held on and did not leak, which is all that can be asked of any repair job of the kind.

The pipe flange was an easier job, and Jimmie applied the same principles in repairing it. The flange was a round one, broken in one place only, and an iron ring was made to encircle it. The ends, instead of being welded, were turned out and drilled for a quarter-inch pinching bolt, the ends, incidentally, being hammered out a little to provide a sufficient width of metal for the necessary holes. The bolt held the broken piece firmly in place and a split steel washer, opened, put on the manifold over the flange and then closed up, made a top clamp, being drilled, of course, for the passage of the flange bolts.

The old car with these homely repairs is still bumbling around the streets of New York, and has been for two years since this job was done—and heaven knows for how many years before that. Incidentally, it is a concrete example of the way it is possible for a car to last, for, so far as the knowledge of man goeth, it is 11 years old—11 years of continual service with a fire, a fall off a bridge into a rocky gorge, and numerous minor accidents sprinkled in to relieve the monotony. Yet the old thing runs with real vim. True, there is a little shakiness throughout, but Jimmie says the car is merely "good and limber," and it certainly does not pound like most old traps. How much longer it will run even the owner refuses to prognosticate. It is known to Jimmie's wife, however, that the car is expected to figure in the repairman's last will and testament.

Necessity for Brake Adjustment.

There can be no doubt that the brakes of a motor car are the most important parts of it in case of emergency, though despite this fact comparatively little attention is paid to them by the average person; in a great many cases they are not touched from one season's end to the next, when exactly the reverse ought to be the case. They should be examined and adjusted whenever the car shows the slightest inclination to continue on its course against the will of the driver, as evidenced by a firm pressure on the brake pedal. Most cars are so constructed that it is quite simple to take up for brake wear and in the majority of cases the work does not necessitate the soiling of the operator's hands.

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1,042,941. Cushion Tire. William D. McCormack, Nashville, Tenn. Filed Jan. 22, 1912. Serial No. 672,944. (Cushion tire with air-chambered core.) 1 claim.

1,042,960. Transmission Gearing. Clark W. Parker, Springfield, Mass., assignor to Parker Transmission and Appliance Company, Springfield, Mass., a Corporation of Massachusetts. Filed Jan. 30, 1911. (Means for preventing clutch engagement while gears are not fully meshed.) 15 claims.

1,042,970. Internal Combustion Engine. William H. Richman, Philadelphia, Pa. Filed Aug. 25, 1908. Serial No. 450,131. (Rotary crankcase valve for two-cycle motor.) 3 claims.

1,042,982. Carburetter. Leonard Sliger, Indianapolis, Ind. Filed May 31, 1911. Serial No. 630,337. (Carburetter with horizontal mixing chamber, contracted air nozzle and adjustable spray nozzle opening.) 5 claims.

1,042,989. Reversing Gear for Multiple-Cylinder Combustion Engines. Joseph Vollmer, Berlin, Germany. Filed Feb. 21, 1911. Serial No. 609,877. (Camshaft and cams for reversing.) 5 claims.

1,043,032. Automobile Horn. John J. Richards, Jr., Brookline, Mass., assignor to William S. Daniels and Archie W. Campbell, Boston, Mass. Filed Aug. 17, 1911. Serial No. 644,614. (Exhaust horn.) 9 claims.

1,043,075. Resilient Wheel. Frank Edward Day, Everett, Mass. Filed Jan. 18, 1912. Serial No. 671,797. (Spring wheel with radial springs around spokes.) 6 claims.

1,043,076. Cooling Device for the Exhaust Valves of Explosive Engines. Charles Deutsch, Amiens, France. Filed Dec. 12, 1911. Serial No. 665,344. (Water-cooling system for exhaust valves). 1 claim.

1,043,077. Carburetter. Herman Dock, Westerly, R. I. Filed Sept. 16, 1911. Serial No. 649,648. (Floatless carburetter with air and throttle valves interconnected.) 11 claims.

1,043,116. Magneto-Mounting. William S. Lee, Detroit, Mich., assignor, by mesne assignments, to Briggs-Detroitter Co., Detroit, Mich., a corporation of Michigan. Filed Nov. 2., 1911. Serial No. 662,241. (Adjustable magneto mounting.) 2 claims.

1,043,121. Safety Starting Device. James T. Mahoney, Worcester, Mass. Filed June 22, 1911. Serial No. 634,698. (Cable and friction clutch motor starter.) 4 claims.

1,043,142. Safety Starting Device. Nathaniel R. Potter, Rochester, N. Y. Filed April 1, 1912. Serial No. 678,931. (Anti-kick crank.) 6 claims.

1,043,143. Tire Fabric. Harry K. Raymond, Akron, Ohio, assignor, by mesne assignments, to the B. F. Goodrich Co., a corporation of New York. Filed July 15, 1910. Serial No. 572,213. (Method of making rubbered fabric for tires.) 6 claims.

1,043,144. Wheel. Wiley Rogers, Fort Payne, Ala., assignor of one-half to George W. Rogers, Menlo, Ga. Filed Jan. 4, 1911. Serial No. 600,774. (Wheel with hub cushioned by radial springs.) 1 claim.

1,043,163. Automobile. John Springer, Trenton Junction, N. J. Filed April 13, 1908, Serial No. 426,666. Renewed March 16, 1912. Serial No. 684,223. (Front-drive truck with friction transmission.) 7 claims.

1,043,174. Self-Propelled Plow. Jay Van Vranken, Davenport, Iowa. Filed July 10, 1911. Serial No. 637,612. (One-wheel-drive motor plow.) 12 claims.

1,043,178. Steering Gear. Alpha A. Waite, La Harpe, Kan. Filed April 24, 1911. Serial No. 622,966. (Steering gear for traction engines.) 4 claims.

1,043,208. Means for Mounting Punctureless Tires on Wheel-Rims. Benjamin Dahl, Minneapolis, Minn. Filed October 5, 1911. Serial No. 653,051. (Compression clamp for putting on filled tires.) 1 claim.

1,043,221. Gas Engine. Adam G. Gibson, Chicago, Ill. Filed Jan. 4, 1909. Serial No. 470,613. (Speed control by throttling exhaust.) 22 claims.

1,043,224. Check-Valve for Pneumatic Tires. Cyrus A. Haas, St. Louis, Mo. Filed July 24, 1909. Serial No. 509,423. (Ball check for tires.) 3 claims.

1,043,227. Automobile Attachment. Lewis P. Halladay, Chicago, Ill. Filed May 21, 1910. Serial No. 562,606. (Support for top bows.) 6 claims.

1,043,254. Internal Combustion Engine. Webber S. Russell, Chicago, Ill. Filed March 18, 1911. Serial No. 615,235. (Two-cycle motor with scavenging air valves.) 5 claims.

1,043,274. Attachment for Spark Coils. Chester H. Thordarson, Chicago, Ill. Filed June 29, 1908. Serial No. 440,845. (Vibrator and adjustment therefor.) 4 claims.

1,043,316. Automobile Bumper. John Hanna and Albert Henry Hanna, Troy, N. Y., assignors to John P. Randerson, Albany, N. Y. Filed Aug. 29, 1910. Serial No. 579,390. (Spring bumper.) 3 claims.

1,043,342. Carburetter for Gas Engines. Mark Musgrave and Claude E. Musgrave, Pittsburg, Kan. Filed Nov. 18, 1911. Serial No. 661,065. (Electrically heated carburetter.) 2 claims.

1,043,344. Engine Cooling Device. Yorgen Newman, Monroe, Utah. Filed April 8, 1912. Serial No. 689,273. (Thermostat-controlled cooling fan.) 4 claims.

1,043,373. Tread for Tires, etc. George Crosland Taylor, Heisby, England. Filed June 15, 1909. Serial No. 502,217. (Superposed layers of thin bias fabric on edge.) 3 claims.

1,043,399. Starting Device for Explosive Engines. Milton E. Cole, Akron, Ohio, assignor of one-sixth to Charles A. Smith, one-sixth to Albert Burnett, one-sixth to Edward L. Scrote and one-sixth to James R. Rowlett, Akron, Ohio, and one-sixth to Frederick E. Hoots, Cuyahoga Falls, Ohio. Filed March 2, 1912. Serial No. 681,301. (Air cylinder with rack-and-pinion piston rod, ratchet on shaft and spring return for piston.) 5 claims.

1,043,402. Tire. Alexander Crowe, Youngstown, Ohio. Filed May 6, 1910. Serial No. 559,769. (Tire armor of metal links forming a continuous covering.) 1 claim.

1,043,407. Pneumatic Tire. Alfred A. Dennis, Grand Rapids, Mich. Filed Feb. 24, 1912. Serial No. 679,551. (Tire with tread of rubber blocks separately attached.) 4 claims.

1,043,424. Tire-Removing Tool. Herman Hevey, Biddeford, Me. Filed June 15, 1912. Serial No. 703,964. (Cam-and-lever tire removing tool and rim clamp.) 1 claim.

1,043,454. Rotary Explosion Engine. William M. Myers, St. Joseph, Mo. Filed Oct. 26, 1911. Serial No. 565,947. (Revolving cylinder motor with pumping cylinder.) 6 claims.

1,043,460. Auto-Fender. Artie L. Raven, Vista Grande, Cal. Filed March 27, 1911, Serial No. 617,251. Renewed Sept. 9, 1912. Serial No. 719,413. (Fender of the pick-up type with operating means.) 5 claims.

1,043,493. Universal Joint Coupling. Stanley Whitworth, Indianapolis, Ind., assignor to American Motors Co., Indianapolis, Ind., a corporation of Indiana. Filed March 28, 1912. Serial No. 686,885. (Disk-shaped cross members in place of the usual trunnion arms.) 4 claims.

1,043,4999. Transmission-Gearing. Warren W. Annable, Grand Rapids, Mich., assignor of one-fourth to Fred Z. Pantlind, Grand Rapids, Mich. Filed Feb. 20, 1911. Serial No. 609,636. (Peg-toothed pinion meshing with holes arranged in concentric circles on a disk.) 13 claims.

1,043,537. Two-Cycle Combustion Engine. Lafe V. Pence, Indianapolis, Ind. Filed April 29, 1909. Serial No. 492,855. (Two-cycle motor with valves and two-diameter cylinders.) 7 claims.

1,043,583. Gas Engine. George E. Forry, Brunswick, Md. Filed June 3, 1911. Serial No. 631,122. (Means for pumping air with one cylinder of a gasolene motor.) 3 claims.

1,043,589. Rotary Internal Combustion Engine. Louis Haubner, London, England. Filed March 30, 1912. Serial No. 687,339. (Revolving cylinder motor with crankshaft also revolving but in the opposite direction.) 1 claim.

1,043,595. Apparatus for Starting Internal Combustion Engines. Gottlob Honold, Stuttgart, Germany. Filed May 23, 1911. Serial No. 628,984. (Priming starter with pump for withdrawing old charge before introducing fresh gas. 5 claims.

1,043,642. Resilient Tire. Horace A. Stoneham and Carl T. Schwarze, South Orange, N. J. Filed Jan. 16, 1912. Serial No. 671,403. (Tire with spring tread and internal helical springs.) 1 claim.

1,043,658. Tire Rim. James D. Anderson, Kansas City, Mo. Filed Sept. 21, 1911. Serial No. 650,487. (Quick-detachable rim.) 4 claims.

1,043,677. Pneumatic Cushion for Vehicles. John Owen Davis, Pawnee, Okla. Filed May 23, 1911. Serial No. 628,936. (Pneumatic cushions in place of springs.) 7 claims.

1,043,692. Carburetter. Walter P. Grath, St. Louis, Mo. Filed Sept. 7, 1911. Serial No. 648,201 (Carburetter with annular air intake and automatic valves.) 9 claims.

1,043,702. Motor Vehicle. Russell Huff, Detroit, Mich., assignor to Packard Motor Car Co., Detroit, Mich., a corporation of Michigan. Filed March 20, 1911. Serial No. 615,588. (Means for supporting torque rod in case of breakage of connection.) 4 claims.

1,043,703. Signaling Horn, etc. Miller Reese Hutchinson, Bronxville, N. Y. Filed Dec. 13, 1905. Serial No. 291,518. (Electric horn with two diaphragms opening into one bell.) 5 claims.

1,043,704. Combination Alarm Device. Miller Reese Hutchinson, New York, N. Y. Filed May 4, 1910. Serial No. 559,330. (Horn with both bulb and electric vibrators.) 17 claims.

1,043,767. Gas Turbine. Hans Holzwarth, Mannheim, Germany, assignor of one-half to Erhard Junghans, Schramberg, Germany. Filed July 29, 1911. Serial No. 641,360. (Gas turbine with separate combustion chambers discharging on turbine.) 8 claims.

1,043,768. Gas Turbine. Hans Holzwarth, Mannheim, Germany, assignor of one-half to Erhard Junghans, Schramberg, Germany. Filed Oct. 13, 1911. Serial No. 654,486. (Gas turbine with separate combustion chambers discharging on turbine.) 16 claims. claims.

1,043,769. Internal Combustion Engine. Edward A. Hornbostel, Des Moines, Iowa, assignor to S. P. C. Gas Engine Co., Des Moines, Iowa, a partnership. Filed Oct. 16, 1911. Serial No. 654,822. (Motor with chambered piston through which exhaust gases pass.) 6 claims.

1,043,785. Rear Axle for Automobiles. Fredereick C. Miller, Cincinnati, Ohio, assignor to Napoleon Du Brul, Cincinnati, Ohio. Filed Dec. 28, 1908. Serial No. 469,524. (One-piece live rear axle casing.) 1 claim.

1,043,791. Lamp. William F. Anklam, Detroit, Mich., assignor to C. M. Hall Lamp Co., Detroit, Mich., a corporation of Michigan. Filed March 16, 1912. Serial No. 684,218. (Adjustment for parabolic reflector.) 4 claims.

1,043,805. Clutch. Elmer W. Crabbe, Bridgeport, Cann., assignor of one-half to Edward W. Harral, Bridgeport, Conn. Filed Nov. 24, 1911. Serial No. 662,100. (Clutch in rear axle casing.) 1 claim.

1,043,816. Internal Combustion Engine. Gilbert R. Elliott, Boston, Mass. Filed Aug. 23, 1911. Serial No. 645,582. (Rotary valve motor.) 7 claims.

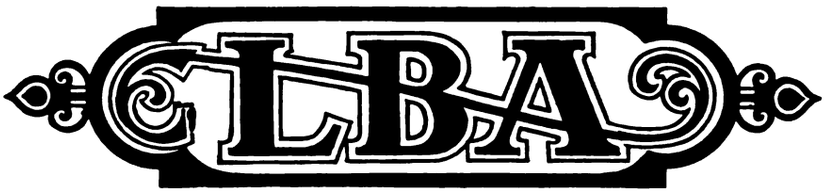
1,043,820. Shock Absorber for Vehicles. George S. Foster, Pueblo, Col. Filed Oct. 21, 1911. Serial No. 655,960. (Pneumatic cushions above springs.) 1 claim.

1,043,827. Shock Absorber. Delbert Hartley, Los Angeles, Cal. Filed May 4, 1912. Serial No. 659,075. Shock absorber of the spring-pressed brake type.) 2 claims.

1,043,828. Vehicle Wheel. Jefferson B. Hayden, San Angelo Tex. Filed March 1, 1911. Serial No. 611,590. (Wheel with curved tangent spring spokes.) 6 claims.

1,043,868. Throttle Controller. James J. Quigley, Mamaroneck, N. Y. Filed Oct. 9, 1911. Serial No. 653,611. (Dashpot on accelerator.) 1 claim.

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Indianapolis, Indiana, Dept. 90.
Please send me at once your "expansion proposition."

Name.....
City..... State.....

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Elyria-Dean
TRADE MARK

Now the TUTO HORN is within the reach of every car owner

Improvements and Manufacturing in Large Quantities makes it possible to furnish the Genuine $25.00 TUTO for $15.00. This new price includes all of the Exclusive features that have made the TUTO horn so practical and popular:

$15.00

Two-tone Feature—Low note for regular service—loud note for emergencies—from one horn and one button.

Instantaneous Action—No loss of time for motor to "speed up."

Steering Wheel Fixtures—Protects the cord—gives neat, permanent job.

Button Always Under Thumb—Gives quick action in case of emergency.

Automatic Operation—Unconscious gripping of button upon approach of danger forces button clear down and gives loud note—instantaneously. No hesitating, no selecting of horn buttons, etc.

Reliability—Always responsive, as same button, cord and horn are used for both notes, thus are self-testing. There is nothing to oil or clean, so neglect will not interfere with operation or ruin the working parts, the same as in mechanical or motor horns.

Liberal Guaranty—Guaranteed indefinitely against inherent defects or breakage of parts due to such defects. We always give the customer the benefit of the doubt.

No Experiment—The Tuto Horn has been marketed for three years and has given unusual satisfaction through its reliability and freedom from trouble. This is proven positively by our records, which show that we have been called upon by less than 1% of Tuto owners for advice or repair parts.

Once a Tuto User, always a Tuto Advocate

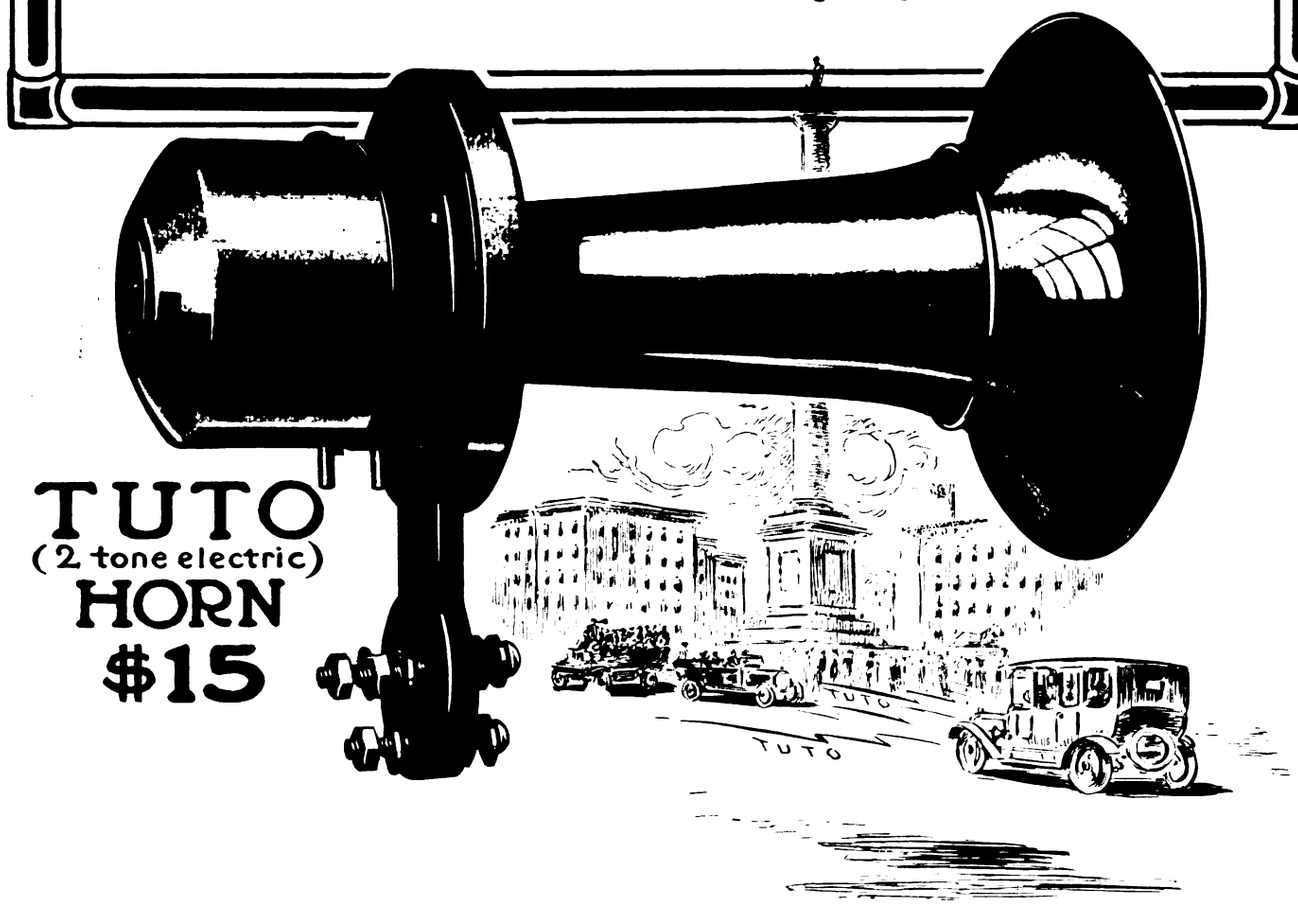
Tuto users never can go back to the old bulb horn or to the **Slow Accelerating Motor Horn.**

Elyria-Dean Products Manufactured Only By

THE DEAN ELECTRIC COMPANY

Kansas City, Mo. **501 Olive Street, Elyria, Ohio, U. S. A.** **San Francisco, Cal.**

"Look for Elyria-Dean Where Quality's Seen"



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Elyria-Dean
TRADE MARK

A High Grade Electric Warning Signal Guaranteed, $8.00

THE REXO HORN IS THE STANDARD EQUIPMENT HORN, evidenced by the number of manufacturers who furnish the REXO on cars they make.

Made from the best of selected materials, assembled by expert workmen in a well-appointed factory.

The action is instantaneous, always responsive.

There is nothing to oil or grease, nor is it necessary to clean in gasoline, as there is nothing to clog or congeal.

Guaranteed indefinitely against inherent defects or breakage of parts due to such defects.

We always give the customer the benefit of the doubt.

Your Dealer will demonstrate the REXO for you today.

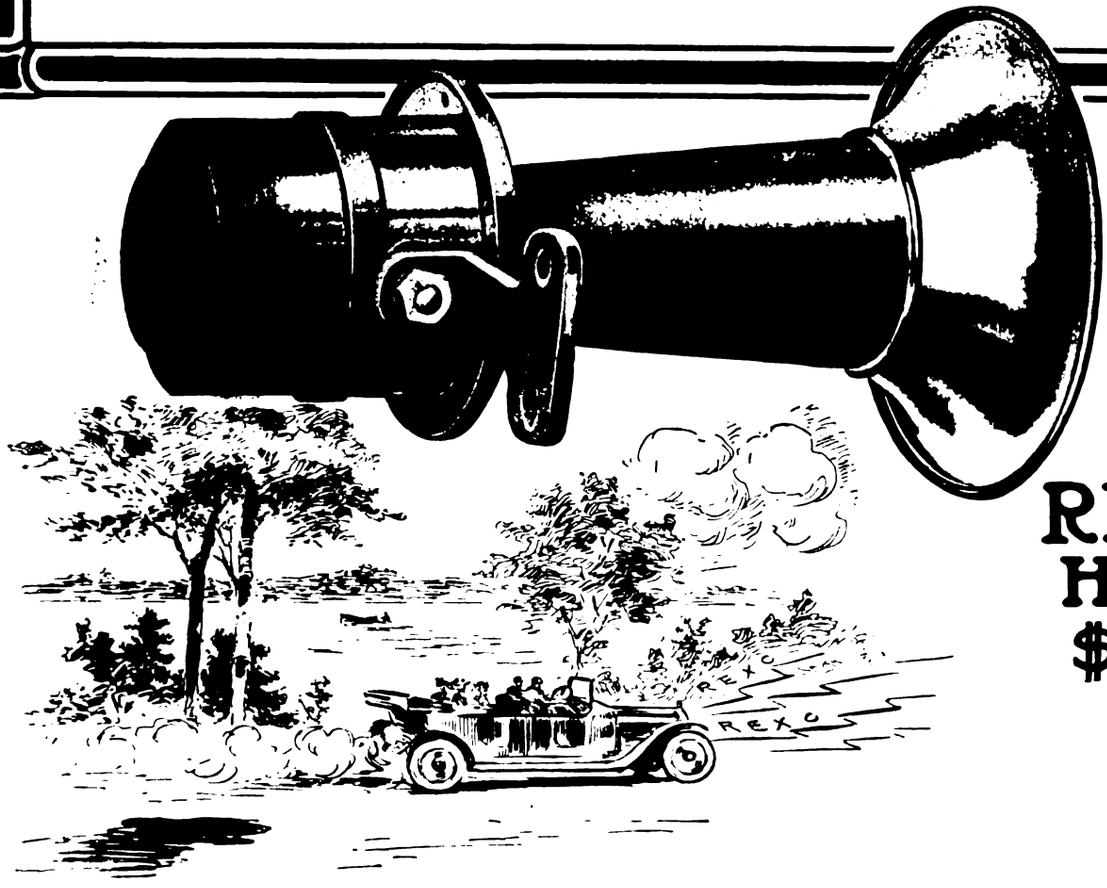
DEALERS: Ask for our dealers' proposition—it is a winner!

Elyria-Dean Products Manufactured Only By

THE DEAN ELECTRIC COMPANY

Kansas City, Mo. 501 Olive Street, Elyria, Ohio, U. S. A. San Francisco, Cal.

"Look for Elyria-Dean Where Quality's Seen"



REXO HORN $8.00

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MORE EFFICIENT SALESMANSHIP

is generally admitted to be

THE GREATEST NEED OF THE TRADE

MOTOR WORLD

is doing its part to render the need less acute by

"Improving the Breed of Salesmen"

One of its most recent efforts in that direction is the

Offer of Four Cash Prizes

$30 — $20 — $15 — $10

for the best four articles conforming to the title

"My Best Sale; How It Was Made"

The competition is open to everyone who ever sold a car, truck or accessory, but all articles submitted must be received prior to September 1st, next. Non de plumes may be employed, if desired.

If ever YOU made a sale of which you are particularly proud, now's a good time to prove it.

All Contributions to be Addressed:
Contest Editor, Motor World, 1600 Broadway, New York

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Arbeco Lamps

The Last Word in Lamps for Automobiles and Motor Boats

Here at last is a botherless lamp for the motorist—a lamp that throws a wonderfully strong, steady, clear light; a lamp which may be cleaned inside and out in half a minute by simply using a damp cloth; a lamp which may be finished to match the body of the car, or in gold, brass, nickel, copper, or any color; a lamp which requires **no burnishing** to renew its beauty.

Remarkable Exclusive Features of this Patented Arbeco Lamp

Both reflector and body are made of the highest grade of glass. The lamp is made by skilled workmen in such a manner that its durability is guaranteed. No metal comes in contact with the glass at any point. The outside finish of the lamp—gold, brass, copper, nickel, or any color—is put on under the outside glass. The reflecting coat is applied outside the reflecting glass—thus one or two rubs with a damp cloth clean both outside and inside, and it is simply impossible for the lamp to be scratched, clouded or tarnished in any way.

The ARBECO Lamp is always bright and **will retain its original lustrous finish and reflecting and projecting power forever.**

The ARBECO Lamp is absolutely impervious to heat, moisture and dirt.

The ARBECO Lamp cannot become hot from the sun's rays nor from the electric light within because of the **vacuum** between inner and outer body.

The ARBECO Lamp is from one to three pounds lighter in weight than any metal lamp.

The reflecting surface is designed on the principle of the true parabolic curve, projecting the most powerful ray of light possible from a point focus.

Fittings: True parabolic **silver mirror** reflector fitted flush to glass in door. Focal adjustment. Wired socket for bulb. Door and trimmings finished in high grade brass or nickel.

Automobile Manufacturers and Dealers in Auto Supplies:

Investigate the ARBECO Lamp—the most remarkable advance in motor lighting. Notice its attractive design, paraboloid shape and classy appearance. The severest tests over rough roads have not damaged it in the least. We manufacture in sizes to meet headlight and sidelight requirements of all sizes of touring cars, roadsters and runabouts.

Write us today for all particulars desired.

THE REYNOLDS-BROWNE COMPANY

1722 First National Bank Building, Chicago

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Ball Bearing Essentials

Full Complement of Balls
Full Depth of Raceways
Uninterrupted Raceways
Solid One-Piece Separator

CAPACITY GURNEY ENDURANCE

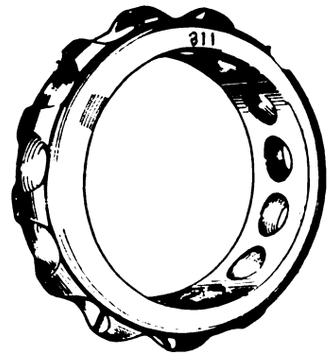
THE real merit of Gurney Ball Bearings is best understood when each of the four essentials is considered by itself as to the functions it performs; then in relation to the others and the functions they perform in the general scheme of a ball bearing.

EACH Gurney Bearing has a **Full Complement of Balls** so that its load capacity is in no way impaired. By the use of the Gurney one piece separator, it is practical to run the balls much closer together than with any other type separator.

EXHAUSTIVE experiments have demonstrated that a **Full Depth Raceway** 4 per cent. greater in radius than the ball brings about the most efficient relation between the two. Any variation more or less than 4 per cent. either decreases load capacity or increases friction. If the race contour be closer to the ball curve than 4 per cent. the area of contact between the ball and the raceway is increased and the friction correspondingly becomes excessive. If the raceways conform less closely to the ball curve the area of contact is decreased sufficiently to lessen the carrying capacity of the bearing without materially reducing the friction.

IT is obvious that **Uninterrupted Raceways** are superior to slotted or interrupted raceways of any type—for an uninterrupted raceway means a greater thrust capacity than one which is slotted; as well as being a superior manufacturing proposition from every viewpoint.

THE **Gurney One-Piece Separator** is die cast from special wear resisting alloy. The partition or septum between each pair of balls is so efficient and durable that it does not have to be so thick as to displace any of the balls and thus reduce the capacity of the bearing. Cast in one piece there are no joints, screws or clips to interfere with its performance, life or strength.



IN considering ball bearings always bear in mind that more important even than the obvious essentials mentioned above is the question of raceway contour—for just as far as you fall short of right contour just so much do you fail to realize the full efficiency to which you are entitled.

GURNEY BALL BEARING COMPANY

Jamestown, New York

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Endurance is the Supreme Test

Five times around the earth and still good—two hundred fifty million, five hundred forty thousand revolutions under load do not wear out

NEW DEPARTURE BALL BEARINGS



During the life of these bearings, five sets of bearings of another type were worn out and replaced. New Departure ball bearings work with the least friction and, therefore, give maximum wear and service American made and guaranteed.

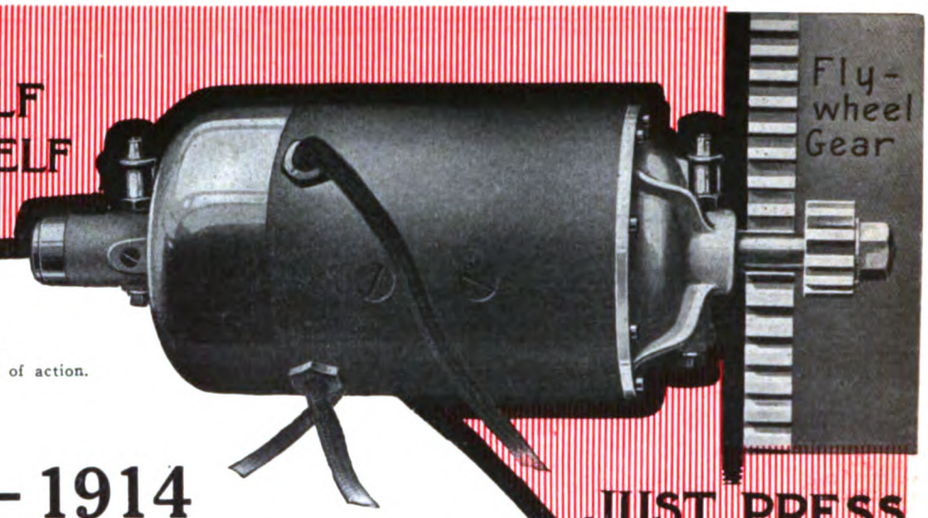
Write for interesting literature

The New Departure Manufacturing Company, Bristol, Connecticut

Western Branch, 1016-17 Ford Building, Detroit, Michigan

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MESHES ITSELF
UNMESHES ITSELF



Model B
Rushmore Starter out of action.

1913 — 1914
Starter Sales and Starter Profits

JUST PRESS
A BUTTON

Have you been counting on the demand for starters in these coming two years to lift your business out of a rut and save the profits of the lean years just past?

Are your hopes coming true?

Or is it costing the profits of two or three clean sales to keep an occasional customer satisfied?

If the harvest time of 1913 and 1914 passes with your balance sheet merely breaking even, how long is it going to take to make up those lost years?

It isn't a question of **sales**, is it? It is a question of **profits**;—and profits come of cars and starters that **stay sold**.

The RUSHMORE STARTER

is completely automatic, yet it is automatic without mechanism. There's nothing to it but a foot-button switch and an electric motor! And the motor does everything, even to meshing and unmeshing with the flywheel gear, **automatically** and at the right moment after the button is pressed. The driver is not tempted to "monkey," and the motor is too simple to go wrong. Attention is limited to oiling:—even the commutator takes care of itself!

Compare the behavior and construction of the Rushmore Starter with the best starter you have ever before heard of, and consider which you would rather have on your cars.

The Rushmore Dynamo is as novel, ingenious, and simple as the starter. Write for information about both.

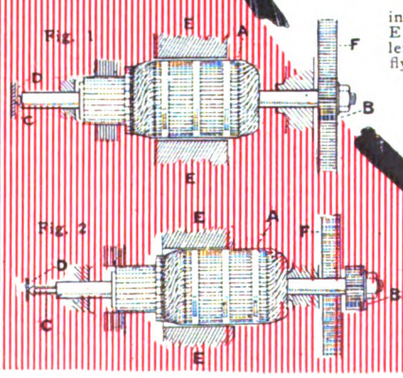


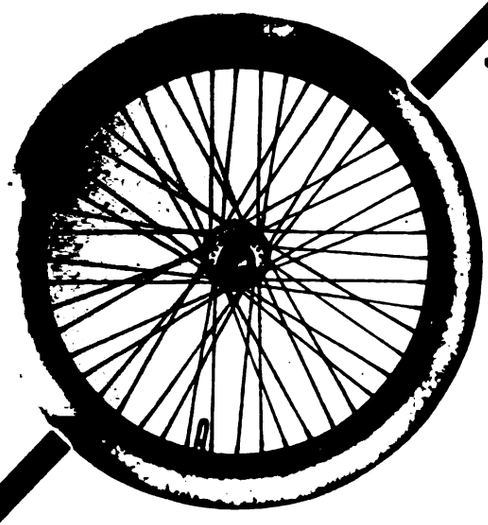
Fig. 1. The Starter in action. Pressing the switch button causes the poles E E to attract the armature A to the left, thus engaging the pinion with the flywheel gear.

Fig. 2. After the engine starts. The increase in speed, when the load is removed, kills the battery current for an instant, allowing the spring C to slip the pinion B out of mesh.

Rushmore Dynamo Works,
Plainfield, N. J.

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Lindsay



Wire Wheels *for* Ford Cars

Many pounds lighter than your present equipment.

50 per cent. stronger by actual test.

Increase tire mileage 70 per cent.

The Lindsay Wire Wheel

(*Patented*)

Interchangeable with your present wood wheels. Require no adjusting or fitting of parts—simply take old wheel off and replace with new. Triple-spoked construction—best grade steel throughout. Patented design of rear wheel incorporates brake-drum with hub, insuring against play or looseness of any kind.

For further details, see your Ford dealer, or if he cannot supply you, write us direct.

The Lindsay Auto Parts Company

315 No. Pennsylvania Street
INDIANAPOLIS, INDIANA

Ford Dealers

Here is your opportunity to supply a demand already created by the proven superiority of the modern wire wheel. We have a sound and attractive proposition to offer you if you will write us. Take out your pen, fill in the coupon, and mail it to us before you forget.

Name.....

Address.....

.....

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How Moses Led the Multitude

Four years ago the Havers Motor Car Co. was organized to build what was then considered the impossible — a high grade, six-cylinder automobile at a popular price.

At the time the first Havers Six appeared there was not a single Six selling within twelve hundred dollars of the Havers price and our speedy funeral was predicted.

But the Havers organization had a new idea, a method different from anything yet undertaken in six cylinder construction.

We saw the mistakes the other Six manufacturers were making in trying to manufacture their entire car in their own plant.

We saw a tremendous non-productive investment in expensive machinery that could be kept busy but a fraction of a day.

We saw an overhead and a waste that put the Six, with all its superiority, within reach of the millionaire only.

We saw that nowhere was the old adage, "A Jack of all trades is master of none" so true as in the making of a high grade motor car.

So we drew our plans—plans that embraced all that was best in six cylinder engineering.

But instead of figuring on building the heavy, more vital parts of the Havers Six, we grasped an idea from what a few of the better Fours had just worked out to a big success, and called in a dozen of the best known specialists—men who are building single parts exclusively—men who were big enough to see the handwriting on the wall and anxious to be the first to enter the six cylinder field.

For days and weeks their engineers and ours worked side by side—experimenting, testing, perfecting—until the first Havers Six appeared—a car so trustworthy that it is still smiling after four strenuous years and a record of many thousands of miles.

Briefly, this is the story of the Havers Six, the pioneer, the leader of the sensibly priced sixes, the inspiration for a host of others that have followed the Havers trail, until today the popular priced Six is justly master of the market.

For we have proved our theory, that in every important part of six cylinder construction there are certain specialists who, through a greater market and a constant concentration of both their energy and capital on one product, can produce a better product for less money than can the manufacturer of a high grade car who is always confined to a limited output.

You know the record of the Havers Six, how its sales have jumped in every territory where it is represented.

While our present series of cars is practically completed, we are going to again increase our capacity and will shortly announce the season's plans. In addition to the always popular Six-44 and five-passenger Six-60 we will make a seven-passenger car and limousine. Demonstrators will soon be ready.

We will want more dealers—good dealers, who are looking for a Six—the oldest in its class, to back up their salesmanship with a car that will deliver.

If "imitation is the sincerest flattery," then we have every reason to be more than satisfied with the result of those carefully laid plans of four years ago for the Havers trail, so courageously blazed, is already assuming the appearance of a well beaten path and, as the pioneers of the moderate priced Six—built with specialized parts, we do not hesitate to share the credit for our success with the specialists whose names appear in the opposite page who aided us so well in pioneering this successful movement.

6-44 HAVERS SIX **$1,850**

HAVERS MOTOR CAR COMPANY

Port Huron, Michigan

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HAVERS SIX ROLL OF HONOR

CONTINENTAL MOTOR MFG. CO.....Motors
WESTON-MOTT MFG. CO.....Axles
WARNER MANUFACTURING CO.....Transmissions
A. O. SMITH COMPANY.....Frames
BRISCOE MANUFACTURING CO.....Radiators
WARNER GEAR CO.....Steering Gears
SPICER MANUFACTURING CO.....Universal Joints
BOSCH MAGNETO CO.....Magnetos
STROMBERG MOTOR DEVICES CO ... Carburetors
NORTH EAST ELECTRIC CO.....Electric Starters
HESS-BRIGHT MFG. CO.....Bearings
HYATT ROLLER BEARING CO.....Bearings

6-60 HAVERS SIX $2,350

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Test This Tire

Mr. Dealer, we want you, as a tire judge, to TEST THIS tire—the Cable-Structur. Test it out with any tire you THINK is equal. Put it to the most crushing tests you know. And compare Cable-Structur service with the service of ANY other tire.

The result will tell—the result will win you to Cable-Structur. We are sure of that. We know what QUALITY AND SERVICE is built into Cable-Structur at our factory. We know what this tire will do, and we want you to know.

More than 30,000 Mansfield tires have been tested out by motorists. And now the demand requires our utmost capacity.

Here are the reasons:

Quality Not Limited

Nothing is allowed to limit the quality of Cable-Structur. We sacrifice a large per cent of profit to give "the best tire in the world."

We use the most costly fabric and the finest rubber. This greatly increases our cost of making. Nothing is used that would cheapen this tire.

Costly Hand Building

We build every Cable-Structur tire by hand. That's the costliest method for us, but we use it because it's the **Best** method.

Our Hand-building assures the utmost accuracy. It assures perfection. It means that every inch of fabric is applied with unvarying precision. And that means uniform strength.

Experts Never Hurry

Our expert tire builders never hurry. That is not permitted. To avoid hurrying we pay by the hour, at highest wages. Thus we get the best efforts of every worker.

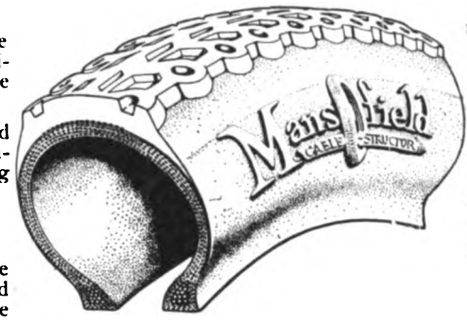
Highest Efficiency

You know what such careful, conscientious building means to both the Dealer and the tire user. And you appreciate how that great care multiplies our cost—cuts our profit.

But in that way we build **highest efficiency** into Mansfield Cable-Structur tires. And the average service to users proves the worth of our precautious methods.

The Logical Base

Cable-Structur base is the simplest and most logical used in tire making. 24 no-stretch, endless steel wires, 12 on each side, are vulcanized into the semi-hard rubber beads. That gives an inseparable unit of strength.



Mansfield
CABLE STRUCTUR

These 24 steel wires have a tensil strength of 16,800 pounds. So nothing can wrench the Cable-Structur tire off the rim, over the flanges. That base gives absolute safety.

Saves Rim-Ruin Costs

By using the Cable base, the clinch is not necessary on the base. The rim hooks are useless and are turned away from the tire. So with the rounded side of flanges next to tire, no rim-damage is possible

This invention, then, saves you rim-ruin, and its costs

Maximum Carrying Power

This compact base gives greater air space inside. That multiplies the carrying capacity, for the air cushion carries the load. That extra capacity cares for the overload and saves blow-outs.

These valuable features we give at no extra cost to you.

The No-Skid Feature

Note the No-Skid feature. Think how those heavy projections prevent skidding—and think how enduring they must be.

Remember, too, that we give a very thick plain tread below. This adds big mileage.

Both treads are exceedingly tough, very difficult to puncture, and highly immune to wear (made of finest rubber prepared by our special formula).

Tested 30,000 Times

Other men have already tested more than 30,000 Mansfields. You test Cable-Structur and see what others found.

The average mileage is between 7,000 and 12,000 miles. Note the mileage you get.

Control the Sale

Do you see why so many men demand this tire? Don't you see why you should sell it?

Get our special proposition and supply the demand for Cable-Structur.

You can control the sale. Start Now. We'll stay with you—and help you sell Cable-Structur. Write today.

THE MANSFIELD TIRE & RUBBER COMPANY, Mansfield, Ohio

107

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Materials, Workmanship and Deliveries As YOU Want Them

WE have open capacity for 1914 and invite your investigation of our facilities to handle properly your contract for axles for the coming year.

Metal Products axles have an unsurpassed record for endurance, silence, good appearance and excellence of finish. They have been used on a number of well known cars and exclusively on two of the most popular cars for several years.

For your 1914 cars buy axles that will help sell them. The good reputation of Metal Products axles will help boost your sales and add to the popularity of your cars.

Metal Products axles are made in both standard types and to specifications. Order what you wish and get deliveries when you want them. We assure you the finest materials and workmanship and deliveries as desired for either gas or electric pleasure cars.

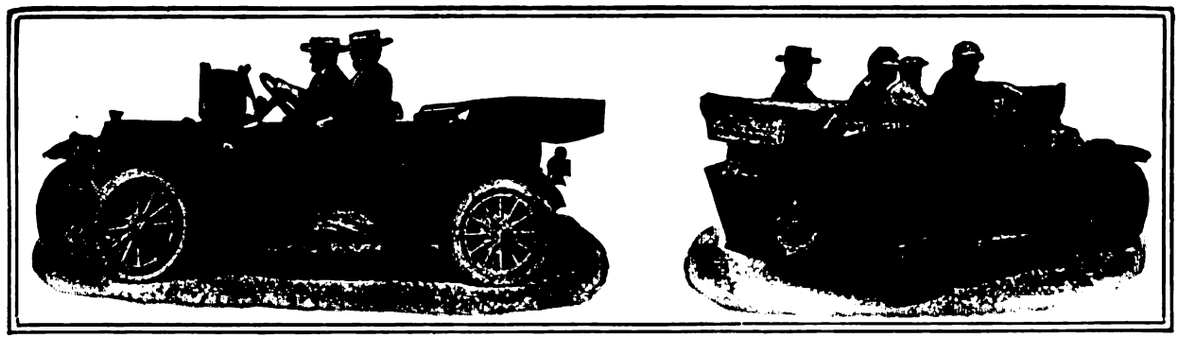
Write us before placing your contract.

Metal Products Company

DETROIT, MICH.

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The Touring Success of the EMPIRE



EMPIRE, the Lightest Entry in the Indiana-Pacific Coast Tour.
Started July 1

The Empire five passenger touring car now on its way from Indianapolis to the Pacific Ocean is the lightest car of the Indiana Manufacturing contingent making this 3575 mile tour. It is the only popular priced car of the tour. It sells completely equipped for $950.00.

EMPIRE, Official Pathfinder and Pilot of the Little Glidden Tour.
Started June 23

The Empire was selected to blaze the trail for Iowa's Little Glidden. Through gumbo mud it plowed on schedule time. On June 23d it started the tour proper as the official pilot of this important endurance tour run under strict A. A. A. reliability rules.

It was the sturdy reliability and touring excellence of the Empire and its economy of up-keep and operation that brought the great flood of orders.

It is largely because of this that we are quadrupling our output for next season: and the increased production is under way right now.

Keep Your Eye on the EMPIRE--"The Little Aristocrat"

5-Passenger Touring Car, Completely Equipped $950.00

Demountable Rims	Windshield	Prest-O-Lite Tank	Speedometer
Mohair Top	Robe and Foot Rails	Gas Head Lights	Oil Sight Feed
Top Envelope	Oversize Tires	Oil Side and Tail Lamps	Rear Double Tire Irons
Enclosing Curtains	Tool and Tire Kits	Pump and Jack	Horn under Hood
Shock Bumpers	Extra Rim	Dash Air Adjustment	Eisemann Magneto

Empire Automobile Co., Indianapolis, U. S. A.

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SPARTON

THE ELECTRIC SIGNAL DE LUXE



THE "SPARTON" WILL OUTSELL ANY OTHER MAKE OR TYPE OF ELECTRIC WARNING SIGNAL ON LOOKS, WARNING NOTE DELIVERED, CURRENT CONSUMPTION, GUARANTEE OR PRICE.

Dealers everywhere are adding handsome profits to their accessory business, for the "SPARTON" is the ONE logical warning signal that meets the owner's requirements.

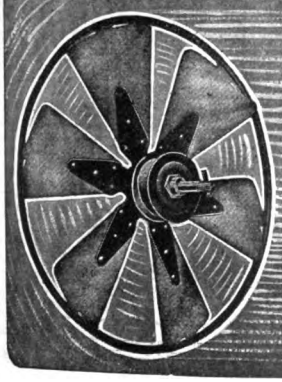
It's RIGHT through and through and the price is no greater than you are expected to secure for Buzzer signals.

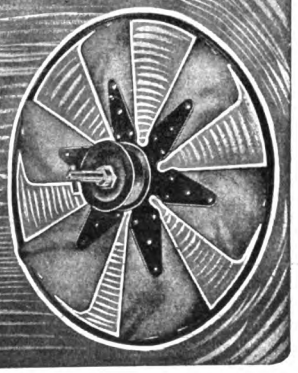
There is a "SPARTON" for every car, either dash or underhood model. Any standard finish. All the "SPARTONS" you want when you want them. One price to all Dealers, NO discrimination, NO exclusive selling arrangement.

PRICES $10.00 to $15.00

THE FAN BUSINESS WE DO PROVES OUR FANS ARE THE BEST.

Standardized parts not only increase manufacturing efficiency, but later duplication in case of accident is possible on short notice.
Antomobile Engineers in the designing of new cars universally indorse our ONE PIECE BLADE RADIATOR FANS. The QUALITY is known, and the cooling results are accepted as maximum.
In solving the cooling problems of most of the better car and Motor Manufacturers we oftentimes find it necessary to meet certain conditions heretofore unknown in other factories. In so far as is possible we build enough STANDARD sizes to meet any cooling requirement. The chances are nine in ten that we can meet yours without making a special job.
Our catalogue is pure gold to the Engineer, who would be interested in knowing what we know about Automobile Fans.
Our experience of years is tabulated in concise form. It is really a text book on cooling. It's FREE to you.





SPARKS-WITHINGTON CO.
JACKSON, MICH.

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One of the Prime Features of the Motor is the Crankshaft

For on this forging, on its inherent strength and on the extreme delicacy with which it is "balanced" and "finished" depends much of the sweetness, power and durability of the motor.

It is impossible to have the machining and grinding of your crankshafts **too well done.**

Specifications and limits may be exactly the same and yet the products of two shops will vary. What is the answer?

The answer is—it's the "human element," which is never the same. To reduce the variability of the "human element" to the lowest possible point we have installed the most complete and up-to-date equipment of tools and jigs that the market affords.

Our Lathe Department and Grinding Department are as complete as experience can suggest. Our Finishing Department is equipped with machinery of exclusive special design, insuring utmost accuracy and speed on turning gear fits, cutting tapers, threading, drilling flanges and oil holes, cutting keyways, etc.

Our Tool Room equipment bespeaks selection with a view to extraordinarily close work on jigs, gauges and all shop tools.

We have been at it seven years—and that we **"know how"** is indicated by a growing list of STEADY customers who reckon quality more important than price. We will be glad to have you write us.

Auto Crankshaft Co.
DETROIT, MICHIGAN

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WARNER
QUALITY AUTO-METER

It costs double and is found on practically every high priced car made

THE Warner Auto-Meter is the highest priced speedometer made. Its association with practically every high priced automobile on the market is a clear indication of how highly automobile manufacturers regard and respect it.

If the car you buy is equipped with a Warner you can feel secure in your investment.

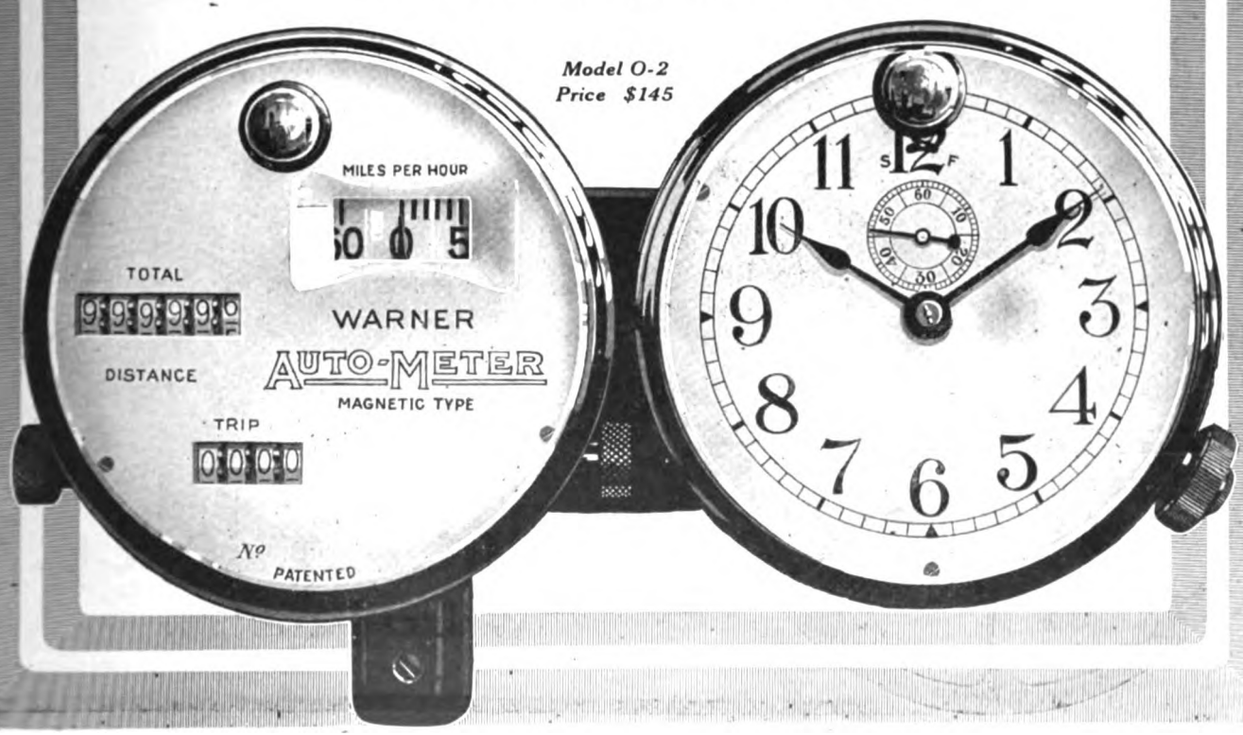
But the absence of the Warner on any high-priced automobile is usually a bad sign. It means the manufacturer is endeavoring to economize at your expense.

Look for the Warner. Insist on it. Take no other.

The Warner Auto-Meter Factory, Dept. 4
Beloit, Wisconsin

International Service

Service Stations in all principal cities all over the world



Model O-2
Price $145

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Truck tire bills

are one of the heaviest items of expense in motor truck operation.

They are reduced

by using the right sort of steel wheels.

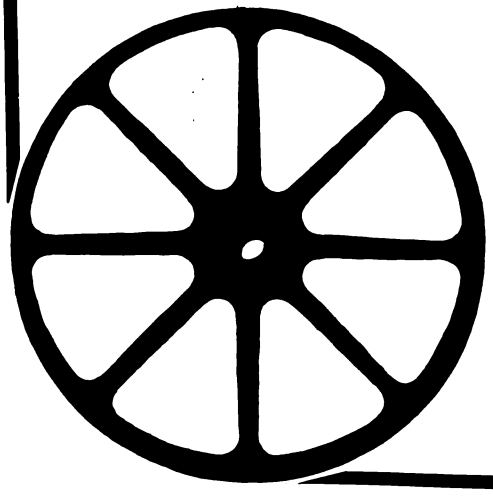


English Omnibus, With Steel Wheels

SHELDON
Steel Wheels

are more resilient than wood wheels. They permit uniform tire wear, because their periphery is always true. And they keep the tires cool, because there is no wood felloe to stop radiation.

If you are a truck manufacturer, you are interested in keeping down your customers' operating expense. Sheldon Steel Wheels will help you do it.



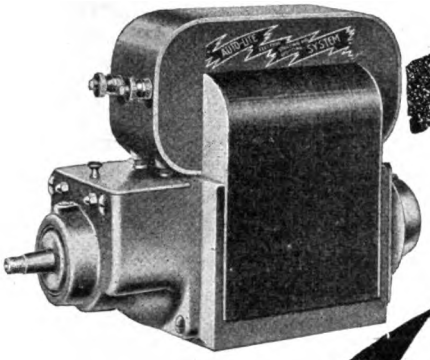
The London General Omnibus Co., the largest tire users in the world, reports the average life of the solid tires on the steel wheels of 2,000 buses to be 25,000 miles. The buses carry a 3-ton load on 34x4 inch front and 40x4 inch dual rear tires. On account of the frequent braking and starting the service is very severe. So far superior to any other type have the steel wheels proven that the number of buses carrying them is now being increased to 5,000.

Incidentally, steel wheels are not damaged by putting on or removing tires, or by the gradual disintegration of a built-up wheel under road shocks. They "stay new" indefinitely.

We shall be pleased to quote on receipt of blueprints showing your present wheels.

Sheldon Axle Co.
Wilkes-Barre, Pa.

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"As Sure as the Whirl of the World"

AUTO-LITE ELECTRIC STARTING and LIGHTING SYSTEM

The New Auto-Lite Electric Generator

Built with magneto dimensions—designed to be connected direct to the magneto or pump shaft—no extra transmission required.

Operates at 6 volts, beginning to generate at 200 R.P.M.

Attains maximum output at car speed of 17½ miles per hour.

Controlled by means of armature reaction and reverse series field—no regulators or relays to give trouble.

An Improved Generator for Automobile Electric Lighting

As you will see by referring to the illustration, the field is made of laminated soft steel, and the exciting coil is placed in a position to afford the best heat radiation.

The ***noticeable simplicity*** of the System is bound to appeal to you.

The armature runs in large ball bearings, and is lubricated by grease, thus obviating any necessity for frequent oiling.

Brushes, made of special carbon, connected with "pig-tails" are mounted on swinging brush holders which automatically compel a constant compensation for wear.

Both brush holders and commutators are very accessible.

Coils are impregnated, varnished and baked, and the whole machine is absolutely water-proof.

Weight of generator is 37½ pounds.

Ignition

The design of this generator is such that it can easily accommodate ignition apparatus.

For the manufacturer who desires lighting, starting and ignition in one system, we are able to provide the best recognized equipment now in use.

The Electric Auto-Lite Company

116 Michigan Street, Toledo, Ohio

Branches: New York Detroit Kansas City San Francisco

The Electric Auto-Lite Company is financially able to handle contracts of any size—to give you apparatus that will meet your requirements in every detail.

The pioneer builders of the 6-volt starting system.

Manufacturers of the well-known "Auto-Lite Starting Motor."

COUPON.

Send for our Handbook on "Care and Operation of Automobile Electric Systems."

Regular price 50c. Will be sent to you for 10c. in stamps if you use this coupon.

This book is so full of interesting information on all modern electric systems that no automobile owner can afford to be without it.

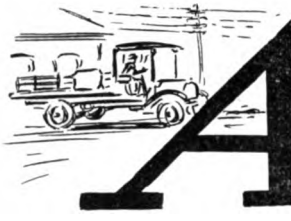
WRITE FOR THIS TODAY.

NAME .....

ADDRESS .....

, ...

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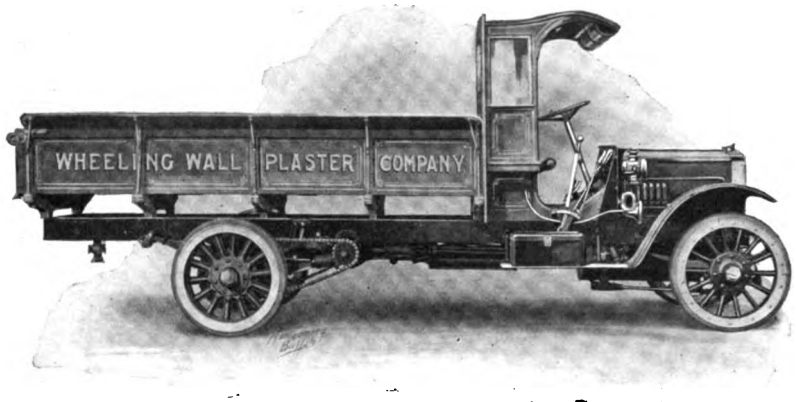


THE ATTERBURY LINE

Atterbury Trucks have gained a reputation for economical running in practically every line of trade.

While many features of Atterbury construction have a bearing upon their economy of running and upkeep, the dominating factor is the proper proportionment of power in trucks of different and varying sizes.

Ten years of experience in building trucks have taught us the fallacy of using one size motor for varying sizes on the theory that as speed decreases loads can increase.



This theory does not seem to consider reserve power a necessary element of truck practice.

Atterbury theory and practice takes into consideration the tendency on the part of users to overload, the necessity to negotiate hills and hard pulling over bad roadways. In a word, Atterbury theory and practice increases power as loads increase.

The proper proportionment of power to load gives Atterbury trucks the characteristic economy in all kinds of service.

When you select a line of trucks to sell be sure to study the Atterbury line and Atterbury methods.

Our sales policy is liberal. Write for full information.

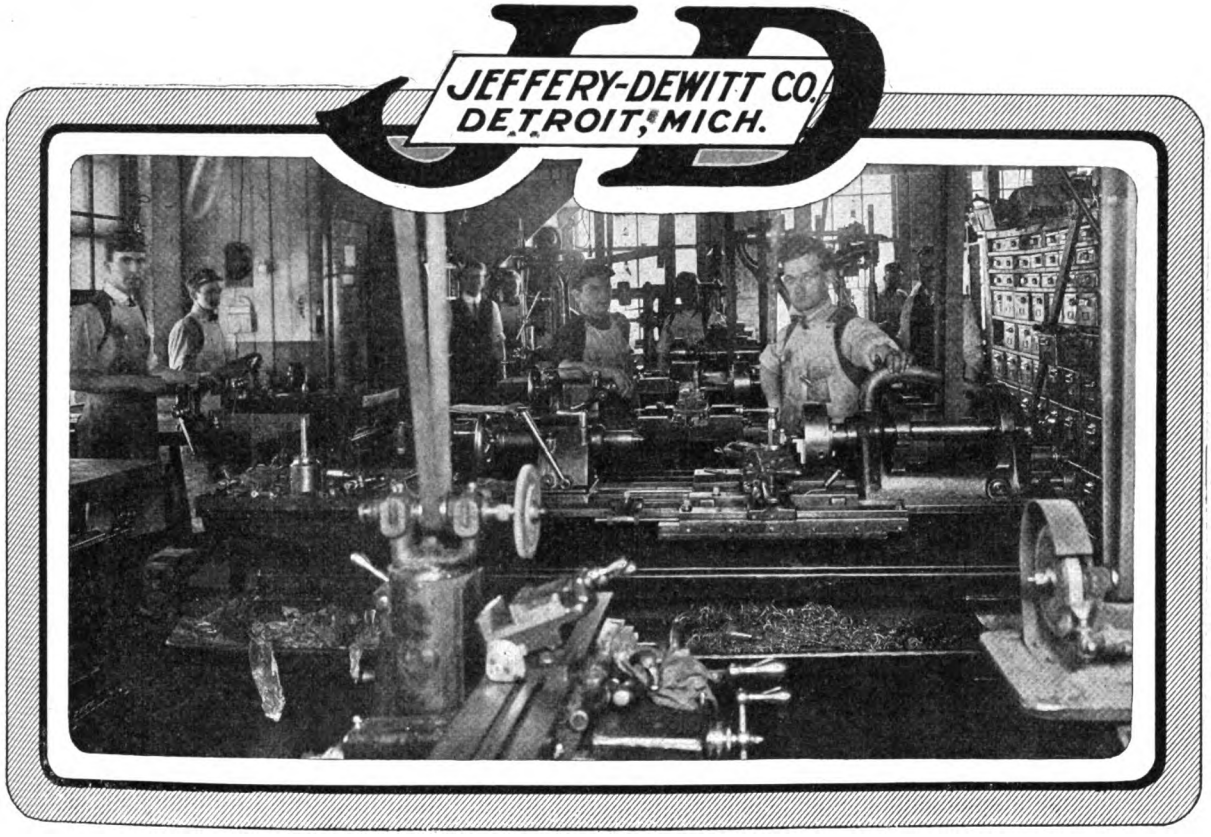
ATTERBURY MOTOR CAR COMPANY

Buffalo **New York**

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Jeffery-Dewitt SPARK PLUGS in the Making

Scene I. A section of the tool room. Here skilled tool makers turn out the jigs, dies, and tools used in the manufacturing department for making the component parts of *J-D* Spark Plugs. Extreme accuracy in these tools is maintained to insure uniformity in the entire product.





At 75c. These Two Plugs Lead the World

The porcelain made by secret formula and of imported ingredients will stand up under the most severe conditions; the metal parts, case-hardened, cannot be bruised; and the electrodes, of special alloy, will withstand the current much longer and carry it far better than the old-style electrodes commonly found in plugs of this price.

The Conical Type Spark Plugs, so called because the cylinder end of the porcelain is conical in form, give excellent results. They have gained wide popularity.

The Petticoat Type, also named from the shape of the cylinder end of the porcelain, affords extra insulating surface around the central electrode. For oily motors, this plug, with the closed end, is the best plug made.

Both Conical and Petticoat types may also be had with platinum points, at 50 cents extra.

Dealers: Jeffery-Dewitt plugs come in many types to suit all motors. Full descriptions will be found in our free literature.



JEFFERY-DEWITT COMPANY

65 Butler Avenue, Detroit, U. S. A.

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Hartford CONE CLUTCHES

IF any assembly in a truck's make-up needs to be fool proof, it is the clutch.

How near can the ordinary driver guess the weight which he is going to apply power to when starting his truck? There is the weight of his truck, his load and the inertia of both.

He starts the motor, sets the spark and throttle, engages the low gear, but before he lets in the clutch can he do more than guess the power his motor is developing?

The relation of one to the other must be solved by the clutch and it must also eliminate from the equation the human element because it is a variable quantity.

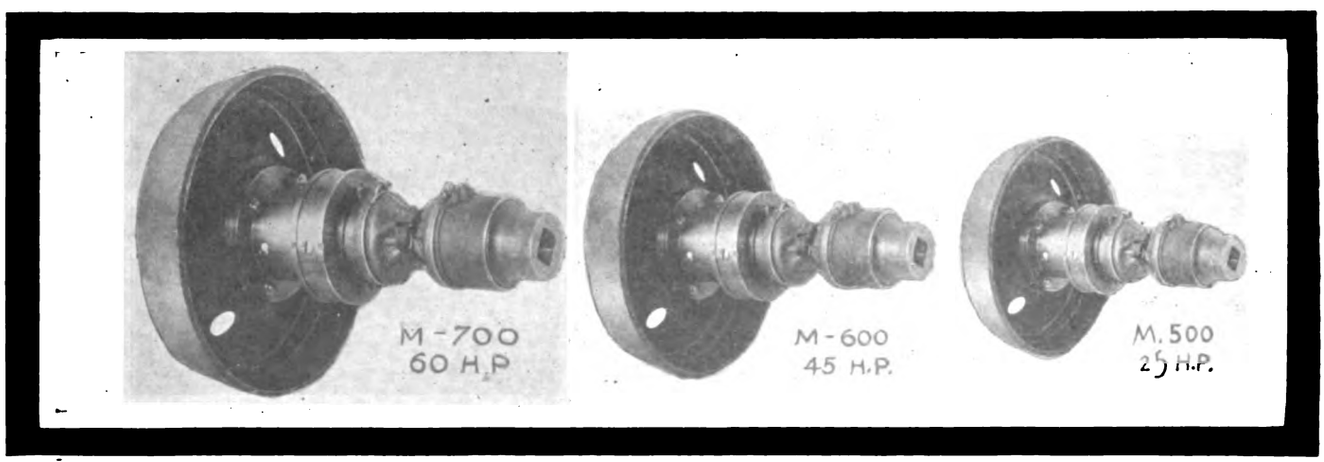
Hartford Cone Clutches arrive at the relation between a motor and its load quicker than any other. Hartford Cone Clutches take hold by gradually increasing their grip or "clutch" on the power until they become at one time a rigid connection between the motor and drive gears.

Their release can be instantaneous in case of emergency or the clutch can be made to slip enough to meet conditions.

Cone type clutches are conceded by engineering experts to be superior to any other type. Hartford Cone Clutches are invariably preferred by truck experts because of their efficiency under the most severe conditions of power, load and driving intelligence.

Many leading pleasure cars are Hartford equipped. Our truck business is growing with astonishing rapidity. There is, probably, no other factory besides our own, so well equipped with special machinery for making cone clutches, or employing as highly skilled mechanics who have worked on cone clutches exclusively for years.

Hartford Auto Parts Company
HARTFORD, CONN.



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70% of the 10 prize winners in the 500-mile race used Bosch Plugs.

Conceded to be the most remarkable ignition victory ever recorded.

THE showing made by Bosch Plugs in this race—as in the many preceding trials of national and international fame—was not an accident, not a mere chance performance, as can be recognized by the extraordinary percentage of Bosch Plug users. These post-graduate motorists, the world's most famous drivers, used Bosch Plugs practically to the exclusion of all other makes. This is proof conclusive of Quality Supreme. You certainly will want Bosch Plugs now—buy them today and be satisfied.

Write today for "Locating the Spark Plug": it tells you what you ought to know about plugs; it's free

1.00 EACH Bosch Plugs are sold by reputable dealers throughout the United States, or if they have not stocked, may be obtained, post prepaid, from Bosch Distributors, Supply Stations or any Bosch Branch.

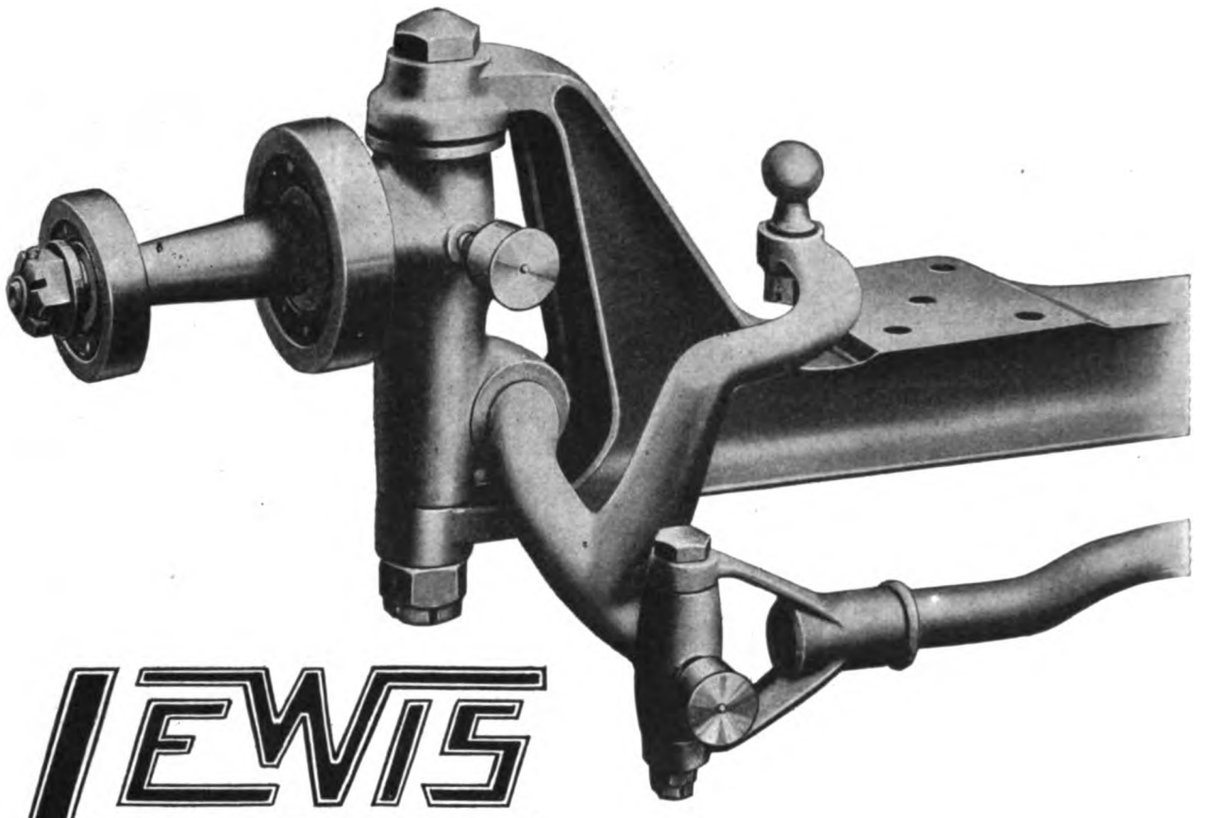
BOSCH MAGNETO CO., 224 West 46th St., New York

CHICAGO DETROIT SAN FRANCISCO TORONTO

OFFICIAL DISTRIBUTORS:

PORTLAND, ME.; BOSTON; BUFFALO; ROCHESTER; PHILADELPHIA; PITTSBURGH; BALTIMORE; RICHMOND, VA.; ATLANTA; TOLEDO; CINCINNATI; INDIANAPOLIS; MINNEAPOLIS; DES MOINES; OMAHA; KANSAS CITY, MO.; ST. LOUIS; DENVER; SEATTLE; PORTLAND, ORE.; LOS ANGELES; SACRAMENTO.

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LEWIS QUALITY

THE clean-cut design of this front [illegible] and its inherent strength and efficiency w[illegible] you at first glance.

Note that the steering knuckles are of liberal size, of heat treated 20-30 pt. carbon steel, equal to any strain to which they may be subjected. Knuckle bolts are 1 inch in diameter, case hardened and ground, and are threaded into the lower head of axle yoke and locked with a castellated nut, preventing any possibility of loosening.

Steering arms are forged with bends and heat treated. They are tapered to fit knuckle and are drawn securely into position with a case-hardened castellated nut and cotter.

Observe that the grease cups are in center of spindle and steering arm, giving equal lubrication to bushings of both knuckle bolt and tie rod bolt.

Lewis Quality in an axle means that every **detail** is looked after with scrupulous care. Nothing is left undone that will assure safety, durability and service.

Get "Lewis Quality" details before you close for 1914. Comparison of values will prove interesting.

The Lewis Spring and Axle Co.

Jackson, Michigan

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Are you interested in MAINTAINING a saving of from $2 to $3 per car?

We spent two years in effecting a substitution of a device which is saving the manufacturers of automobiles from $2 to $3 por car.

In return, wo simply claim a hoaring regarding the qualities of the device substituted which are essential for continued economies.

We have demonstrated to our own satisfaction the truth of our contention [illegible] THREE ESSENTIALS of a nutlock—SECTION, ANALYSIS, [illegible].

Manufacturers whose engineering departments make cloce inspection of used cars will secure intersting facts that will confirm our observations.

In the meantime we stand ready to supply conclusive data. Shall we send it to you?

THE NATIONAL LOCK WASHER COMPANY

CHICAGO, ILL.——————NEWARK, N. J.

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These Forces Will Sell Kelly Trucks for You

YOUR SALES

Prospective Purchasers

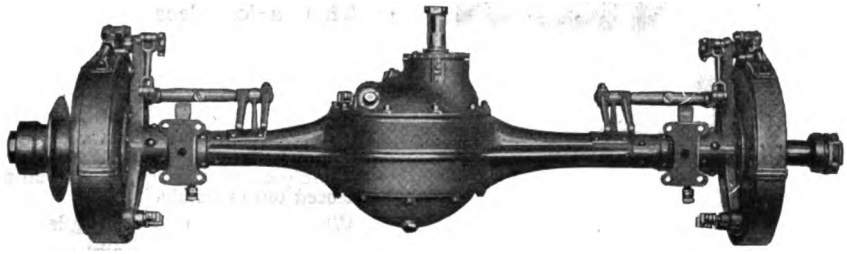
KELLY TRUCKS				Kelly Organization	
Mechanical Excellence	Economy	Efficiency	Increase Field	Service	Sales Co-operation
Latest design one and three ton water-cooled models. — Best materials. — Superior workmanship. — Seven years of exclusive truck-making—not a "side-line." — The Kelly guarantee. — Design two to five years ahead of all others.	Cut delivery costs. — Save barn space. — Do not eat when idle. — Cut down number of drivers. — Decrease delivery cost in every way.	Better service to customers. — Quicker deliveries than competitors can make. — Advertise owner's business. — Can work as long as necessary. — Board of engineers and transportation experts will solve your problems. — Work well in any weather.	Increase radius of operation. — Greater mileage. — Bigger loads. — More business for owners.	Factory service stations centrally located. — Quick supply of parts, etc. — New York Boston Philadelphia Chicago Cleveland Kansas City San Francisco Seattle Los Angeles Dallas Birmingham — Gives 100% truck efficiency at all times.	Direct sales co-operation with dealers. — Aggressive advertising. — Intelligent publicity. — We work on your own list of prospects with you. — Field men to help. — Special letters for your prospects. — Real co-operation in every way.

Write immediately for our Agency Proposition

The Kelly-Springfield Motor Truck Company
1036 Burt Street, Springfield, Ohio

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"American"



Axles of Quality

EXPERT judgment of a motor car discriminates sharply between external features which may be optional with any car, and those fundamental features that are built into it.

We don't think any one will dispute the statement that of those features which are both vital and distinctive, it is the axle that really establishes a car's class.

The satisfactory operation of any car, whether measured in dollars or in security, is based upon axle efficiency. And this is as true of a gasoline car making its own power, as it is of an electric which leaves the garage with a measured amount of latent power in its batteries.

The axle problem is wholly one of power transmission, which depends upon the material used, excellence of design and durability of construction. Judged by any one of these factors, well posted automobile engineers will frankly concede the superiority of "*American*" **Axles.**

The adoption of "*American*" **Axles** is simply a quality proposition. The owner of a car equipped with them has the assurance that nothing equally good can be bought at any price.

"*American*" Axles offer the option of our own perfected bevel drive or the famous Lanchester-Daimler Worm Drive



THE AMERICAN BALL-BEARING COMPANY, Cleveland, Ohio

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SPRINGFIELD CONVERTIBLE BODIES

With a Springfield Convertible Body, a few minutes work will turn the open touring car into a handsome luxurious closed car.

This radical departure from the unsightly, uncomfortable, ordinary top, is the final result of three years' development and it is today the ***only*** practical all-year-round body on the market.

When open, there are no signs calling attention to the fact that the body can be entirely enclosed in glass—just an ordinary closed top is visible.

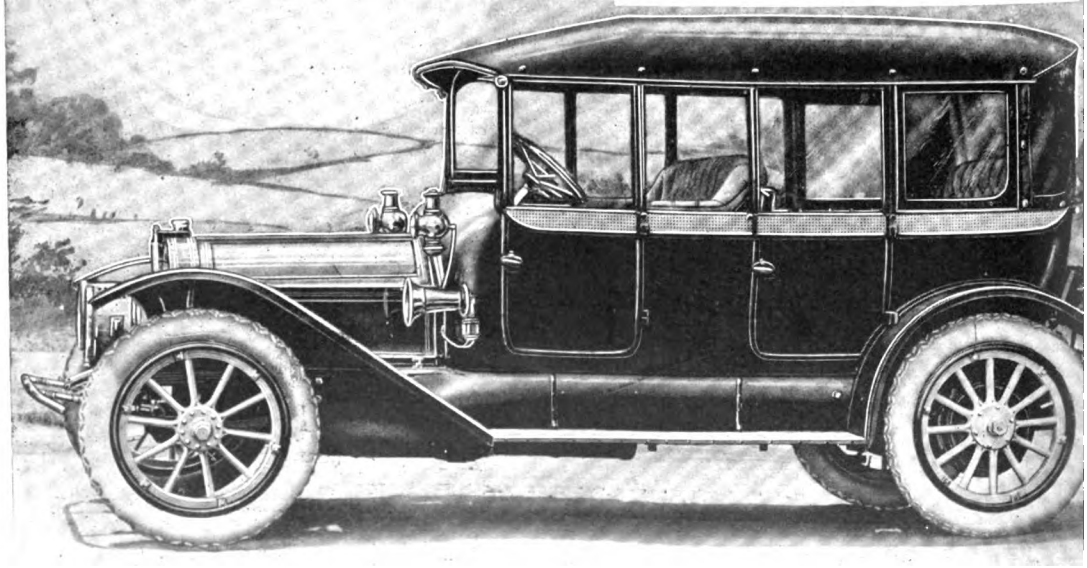
When in position, the Springfield Convertible Body gives a beautiful glass enclosed, weather proof car with wide doors free from obstructions—in every way equal to the permanently closed car in appearance and comfort.

The transformation can be worked in remarkably short time through the simple operation of raising the top and adjusting the glass windows which are contained in a box back of the front seat when the car is open.

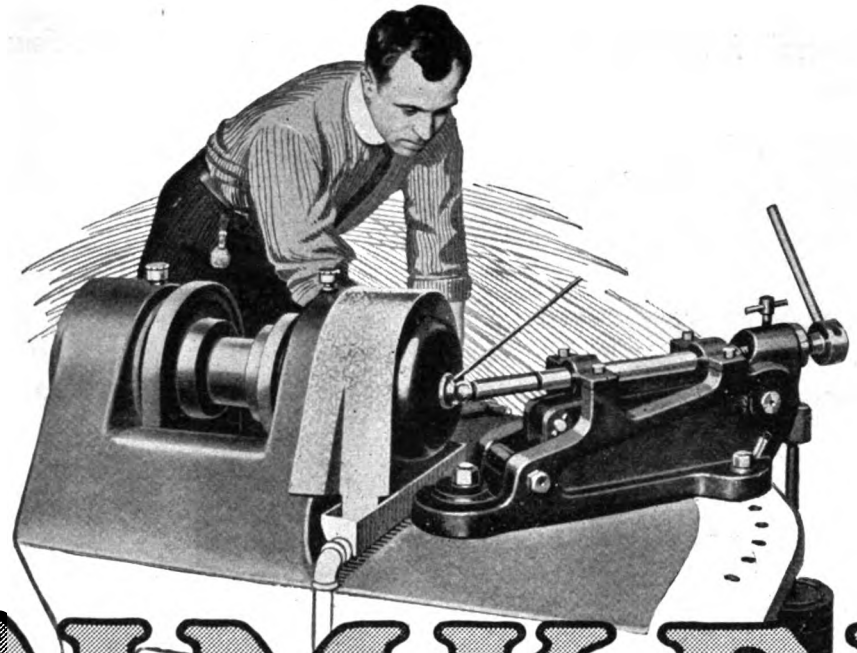
The Convertible Top feature is exclusive on Springfield Metal Bodies. It will not fit any other body, but we are prepared to make prompt deliveries on all designs from the little runabout to the largest limousine or landaulet.

Further information is at your command. Write for it.

Springfield Metal Body Co.
Springfield **Masachusetts**



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TIMKEN
TAPERED ROLLER BEARINGS

The One Place Where Timken Bearings Wear Out



Every Timken Bearing, large or small, is of just one Timken Quality, through and through

THAT place is not in your car! It is in a special test machine that is built to wear out bearings.

Even there we have to put the load of a 5-ton truck on the ordinary pleasure car bearing—we have to run it under this great overload 70 to 80 miles an hour, for days and nights, in order to learn within a reasonable time what a Timken Bearing will stand.

Why do we have this "wear out" test machine?

For three reasons:

1. To find the weakest link in the chain. Each of the 210 different sizes of the Timken Bearing has three fundamental parts—cone, rollers and cup. The bearing is no stronger than its weakest part. The "wear out" machine finds that weakest part in each size bearing. Then the entire Timken organization concentrates on the improvement of that part.

2. Timken engineers have designed each of the 210 sizes for a definite radial load and a definite end-thrust. Are their calculations correct? Do they work out in actual practice? The "wear out" machine tells.

3. The "wear out" machine enables us to compare every other type and make of bearing with the Timken. That's important because we have sworn that the Timken shall always lead in the quality of its performance.

Years ago the Timken Tapered Roller Bearing proved its superiority for the severe service of the motor car. Because its unique principles of design were right!

We have never found a way to improve on those basic principles. But what we have done and are doing every month and year is to make the Timken a better bearing in steels, in heat-treatment, in accuracy.

So that it will be still longer lived and will give an overflowing measure of satisfactory service to the user.

Get the interesting story of the bearing by writing for the Timken Primer No. T-1. Sent free, post-paid.

124

THE TIMKEN ROLLER BEARING CO.
Canton, Ohio, U. S. A.

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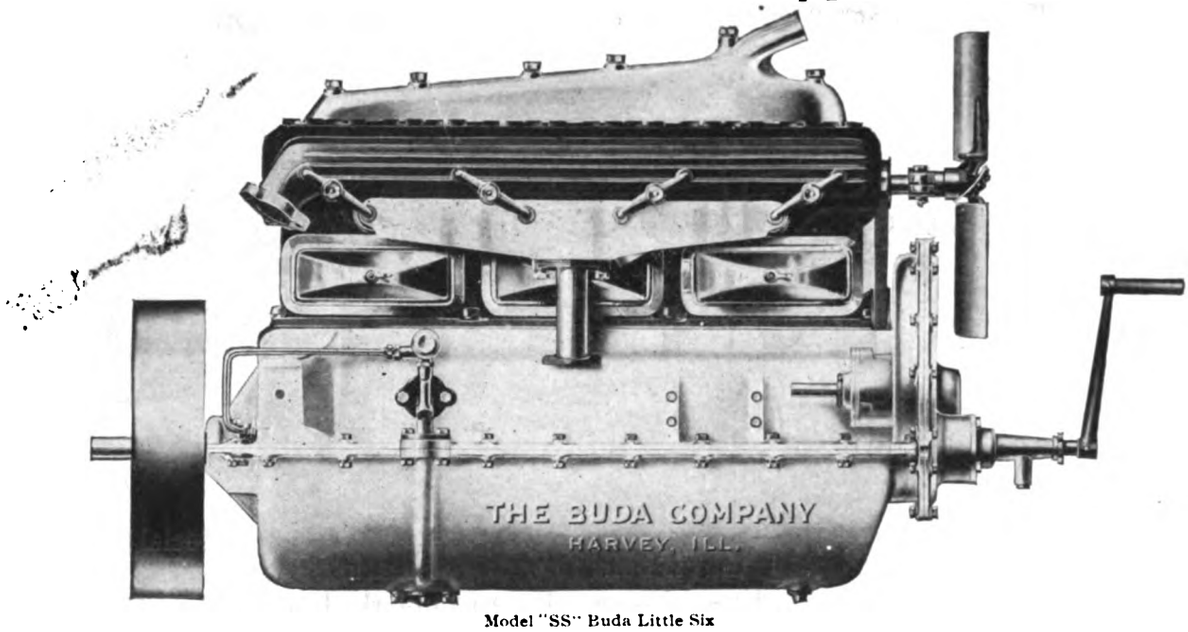
The Proud Boast of the Automobile Manufacturer

used to be: "We make every part of our car in our own factory." After they had tried it for a year or two they found out, (and *their customers* found out) that, *although a* GOOD *car* MUST *be a unit in* DESIGN, *it* CAN'T *be a unit in* CONSTRUCTION. They found out that in a GOOD *automobile each essential part is a job for a* SPECIALIST—one that only a specialist, concentrating *all* his thought, *all* his experience and *all* his manufacturing facilities ON ONE THING, can rightly handle.

So today the proud boast of some of the proudest manufacturers is, that following the great DESIGN of *their own great engineers*, they are building their car of this good axle, that good wheel, the other good transmission, and so on to the

PROUDEST BOAST OF ALL—

"We Use the 'Sweet-Tempered'"



Model "SS" Buda Little Six

BUDA MOTOR

"the part that sells the car"

Indeed True That nothing speaks more plainly of Buda superiority than the dropping by car manufacturers of their Motor Departments and the adoption of Buda Motors. The tendency of the trade is toward recognition of the fact that the *essential parts* of a motor car or truck should be the work of *Specialists*, not *Departments*.

About the best selling instructions the Manufacturer can give his salesmen or suggest to his dealers begin with: "Flip open the hood and play your strongest card first — The *Buda Motor.*"

The car buyer has come to know all this—and WHEN . THE . CONSUMER . KNOWS . WHAT . HE . WANTS— "arguments are not in order." His educated preference is a mighty force in your favor and, to have him on your side you must give him *what he wants.* (*We* teach him *why.*)

See us—Ask us—Write us

THE BUDA COMPANY

FACTORY, HARVEY, ILL. (Chicago Suburb)

Address all correspondence to our **FACTORY REPRESENTATIVES**

BRANDENBURG & COMPANY

1108 SOUTH MICHIGAN AVENUE, CHICAGO FORD BUILDING, DETROIT 57TH AND BROADWAY, NEW YORK CITY

1914 Specifications

Model "SS" 6 Cylinder 3¾x5½
Model "T" 4 Cylinder 4¼x5½
Model "O" 4 Cylinder 4½x5½
Model "Q" 4 Cylinder 3¾x5½
Model "M" 4 Cylinder 3¾x4½

Model "SS" furnished either as separate Motor or with Bell Housing Crank Case.

Models "T," "O" and "Q" furnished either as separate Motors or with Bell Housing Crank Cases. Also either for sub-frame or main frame support.

Model "M" furnished in separate type only for sub-frame support.

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HYATT QUIET BEARINGS



The Short Series, High Duty Type, of the Hyatt Roller Bearing is furnished in shaft diameters from one to three inches inclusive, and in lengths from one inch upward. The Long Series is furnished in the same diameters and in lengths from two to three and one-half inches.

Special diameters and lengths to meet individual requirements, consistent with proper engineering practice, will be furnished promptly.

Short Lengths are made possible in the High Duty Type through the use of nickel steel rollers, properly heat treated and ground, operating on solid inner and outer steel casings, also heat treated and ground. Heavy loads can thus be concentrated on short lengths.

HYATT ROLLER BEARING CO.
DETROIT. MICHIGAN
Works, Newark New Jersey

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INTERLOCKS

Stop Your Tire Trouble

Don't fail to write today for Interlock Booklet which tells all about Interlock Inner Tires, and gives many new tire pointers of the greatest value to every automobile owner.

The Interlock is an **extra inside tire** which is placed between the outer casing and the inner tube for the purpose of so strengthening the tire that it will be proof against blow-outs, rim cuts and punctures and therefore last twice as long.

When you know what Interlocks will do, you will want them. They give you practically **two tires on each wheel** with no change in the looks of the tire. With this combined strength you can run your car an entire season without delays, annoyance or tire trouble, and save about half your tire expense.

In writing for catalog, please give name of your local dealer, and if he cannot supply you with Interlocks, we will send you the name of a nearby dealer who can.

To Dealers: A good proof of the efficiency of Interlocks is that they are regularly stocked in all sizes by the largest jobbers who only handle quality goods, such as Beckley-Ralston Co., Chicago; Bi-Motor Equipment Co., and Iver Johnson, Boston; Fry & McGill Co., Denver; Motor & Machinist Co., Kansas City; Chanslor & Lyons, Los Angeles; Western Auto Specialty Co., Iowa City; Ia.; Gibson Automobile Co., Indianapolis and all leading automobile supply houses.

We Want Live Dealers Everywhere

Write for our proposition and give the name of your jobber.

DOUBLE FABRIC TIRE CO.
600 9th Street Auburn, Ind.

Square Motor Horn

Because of its simple design, few parts and consequent saving of manufacturing costs, we use only best of materials, finish and methods and still make the price lower than any other motor driven horn on the market.

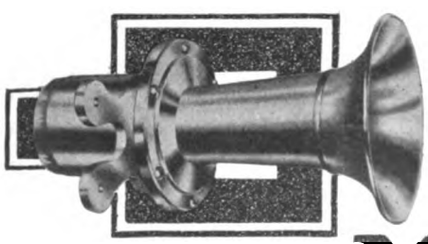
We sell only through dealers. Write today for full particulars and discounts. We protect dealer and user absolutely.

How many Square Horns can you sell? Think it over and send in your order.

Junior Price $10.00

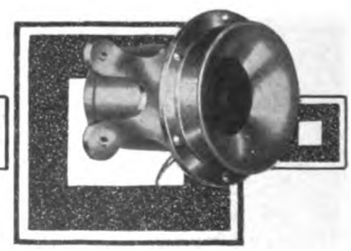
The Square Motor Horn Co.
(INCORPORATED)
496-498 East 134th Street, New York City

Juniorette Price $9.00



Length, 10 inches; Flare, 4¼ inches.

Motor Driven



Length, 5 inches; Flare, 3½ inches.

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Biggest Demand for "SOOT PROOF" Spark Plugs

More than half the motorists you meet know the merits of Mezger "Soot Proof" plugs.

Millions of car owners have adopted "Soot Proof" plugs because they know they deliver the hottest sparks, never grow feeble, balk or leak and are self-cleaning. This you can guarantee.

There is a better business in "Soot Proof" plugs than in any other because of the growing demand for a trouble proof plug. This demand is the result of the experience of millions of motorists with spark plugs for the last twelve years.



C. A. MEZGER
(INCORPORATED)

Soot Proof Spark Plugs

15 Canal Place New York

Philadelphia, 1427-33 Vine St., Petry-Cassidy, Inc.

Chicago, 1430 Michigan Boulevard, F. E. Sparks.

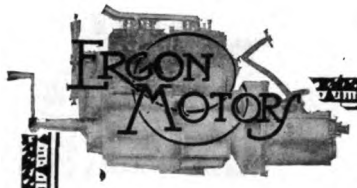
Detroit, Ford Building, H. E. Butcher.

Portland, 329 Ankeny St., Hughson & Merton.

Seattle, 924 E. Pike St., Hughson & Merton.

San Francisco, 530 Golden Gate Ave., Hughson & Merton.

Los Angeles, 1229 South Olive St., Hughson & Merton.



Prompt Deliveries

We can make prompt deliveries of any Ergon standard motors.

Model C, 3¾ x 4½
Model CX, 4 x 4½
Model D, 4⅜ x 6

Ergon motors are four cyilnder, four cycle, L head, unit plant type.

Standard sub-frame motors for use with separate clutch and transmission can be supplied in regular sizes.

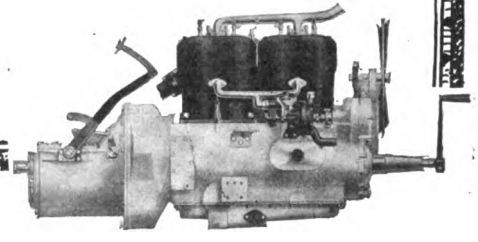
In Model D, 4⅜ x 6, Renold Silent Chain replaces timing gears.



The Ergon cam shaft is a one-piece forging and is provided with large bearings. A thrust collar effectually prevents any endwise movement. The spiral gears are sand blasted and ground after hardening to insure perfect running.

We solicit correspondence regarding Ergon Motors and deliveries.

Hazard Motor Mfg. Co.
ROCHESTER, N. Y.



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Circumstances alter cases—

but let no circumstance alter YOUR SOUND JUDGMENT in the constant use of SPLITDORF COMMON SENSE PLUG.

The insulation of SPLITDORF PLUGS is high quality mica and designed and manufactured to absolutely withstand the breaking down effects of high-tension current.

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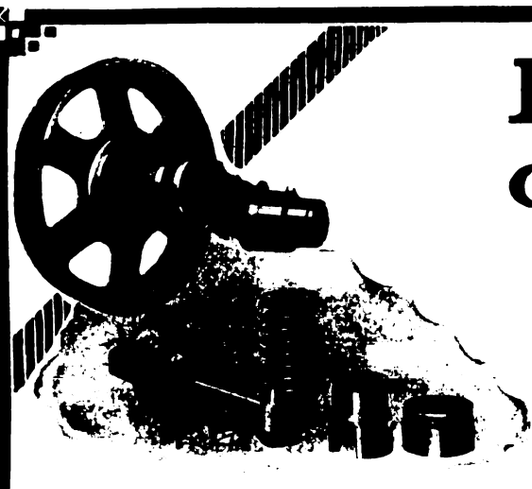
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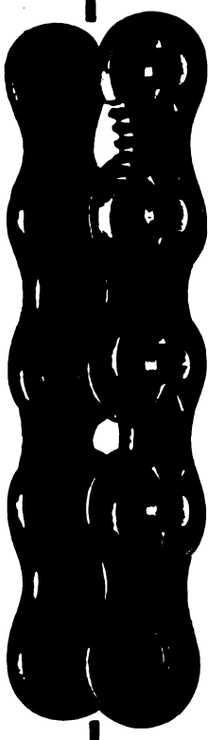
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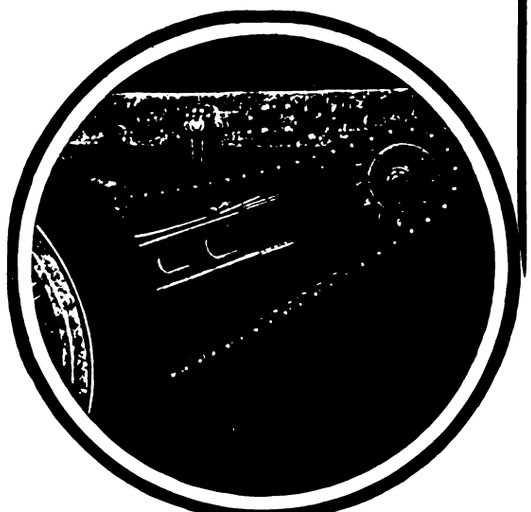


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The Most Practical for Motor Trucks

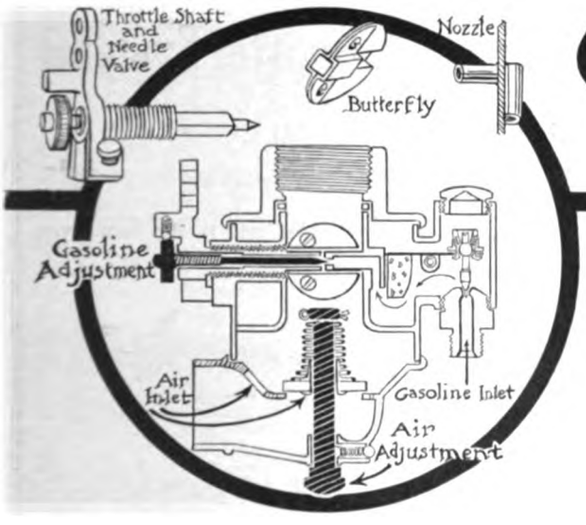
Because the "Whitney" Cotter Detachable Chain can be easily separated at any link and lengthened, shortened, or repaired without the use of any special tool. This is of great advantage to truck builders, owners and drivers.

"Whitney" Chains are used by the leaders because they are strong, accurate, dependable and, above all, long lived. They are made right and they're made from the right kind of material, thus giving highest efficiency. When making replacements insist on a "Whitney" Detachable.



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tire strikes a stone—

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"Air-free, carefree," and wear-free besides: they last longer than any other kind. We guarantee Dayton Airless for 5000 to 8000 miles; according to the weight of your car.

Ask us to prove these facts to you. Send for our Catechism; shows you that tire economy is not always in the first cost; shows you a newer kind of automobiling pleasure.



To Agents: Write us about territory for this practical, sure-selling line of tires.

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The LUXURIOUS BROC

with forward-drive, wheel-steer and *new foot-control* will *completely satisfy them.*

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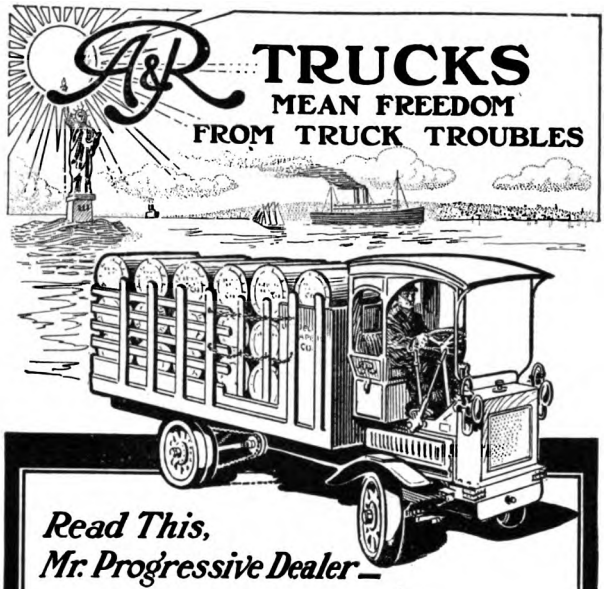


To return to neutral position (power off), the pedal is tilted in the opposite direction. Additional pressure applies the shaft-brake. Rear-wheel locking-brakes also are furnished.

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C. And thoroughly covers a time limited, added profit offer to Dealers.

You will do well to investigate this proposition to Dealers **immediately** as we will withdraw our offer Sept. 20th, 1913. Wire or write today for full particulars.

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"I can't afford to take *any chances.* We have all foolishly depended on rubber alone long enough. It's time to awake to our responsibility. So go at once and buy a complete equipment of *Weed Chains* and never start out without them when the roads or pavements are slippery or greasy."

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Probably no other device has done so much to raise the factor of automobile safety as WEED CHAINS. They are the proverbial "ounce of prevention" against skidding, the cause of over ninety per cent of all automobile accidents—*Life Insurance* and *Accident Insurance Companies* strongly endorse them and recommend their use. *Taxicab Companies,* for their own protection, *insist* that their drivers put them on when the streets are wet or slippery.

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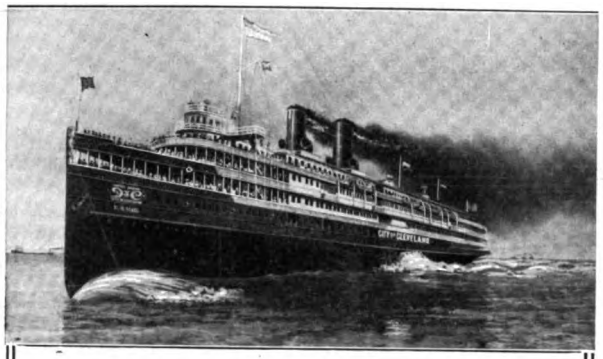
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Coats the surfaces of gears and bearings in transmissions and differentials with a wear-diminishing, friction-reducing veneer of pure flake graphite which is effective as a lubricant even in the absence of any oil or grease. How Dixon's Graphite works is explained in "Lubricating the Motor," No. 23, sent on request.

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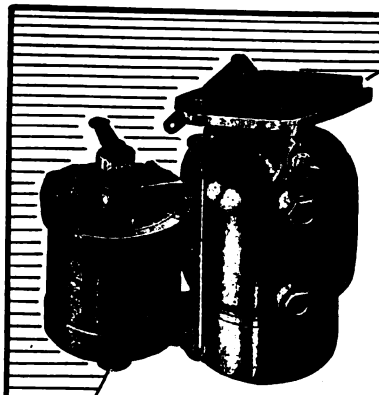
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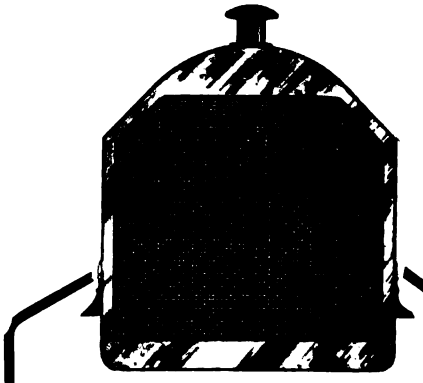
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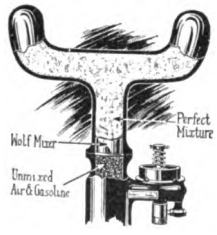
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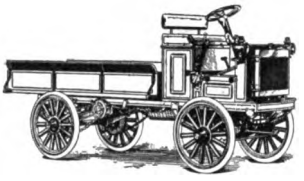
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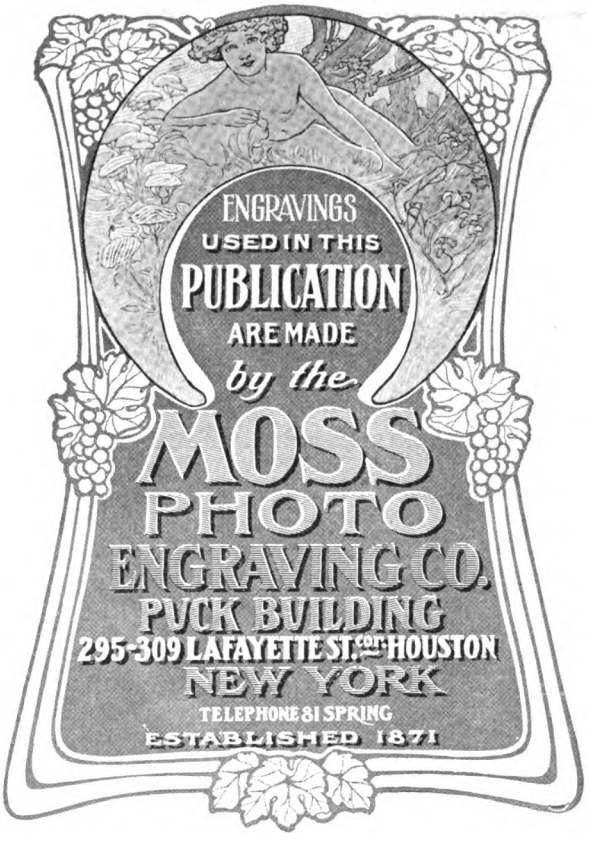
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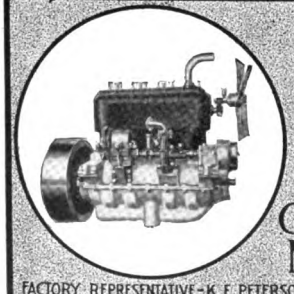
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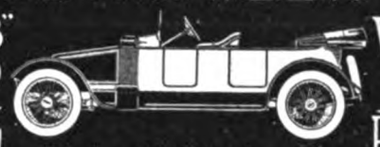
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Keeton Motor Co. Lawton & M.C.R.R. PHONE WAL. 1067 Detroit U.S.A.

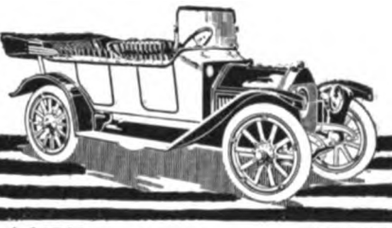
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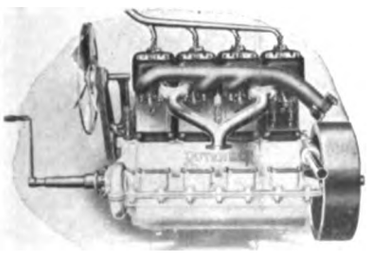
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Manufactured since 1901 for high grade

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Mondex-Helix Gas Mixer reduces your gasoline bills 25 to 40%. All sizes $5.

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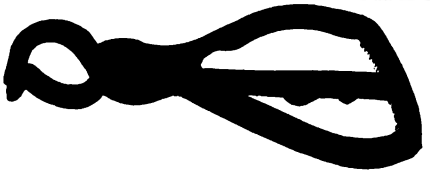
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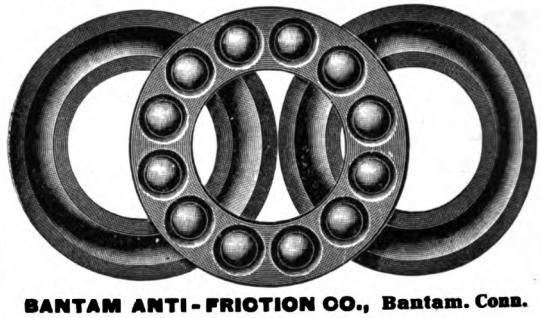
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Any Kind Every Kind Stock, or to Blue Print **Rims** **Clincher Q. D. Demountable Channels**

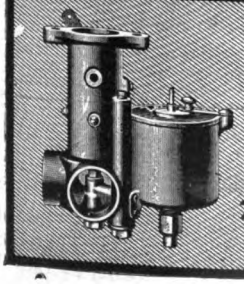
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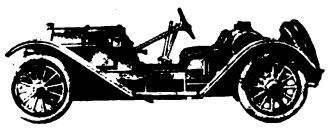
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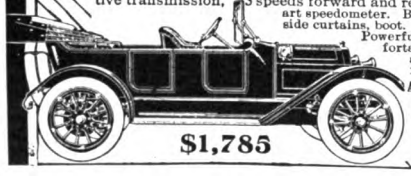
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We specialize on gears. Are already producing them for over 25 well known manufacturers. With increased facilities we can now contract to deliver you guaranteed gears, in any quantity—just as wanted.

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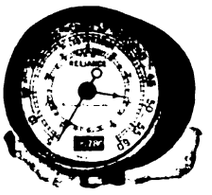
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Special features that eliminate speedometer troubles. Send for the booklet.

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MOTZ Cushion Tires

For Pleasure Cars and Light Delivery Cars

Send for Booklet 58

A—Shows *double*, notched treads.
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Now standard on fourteen makes of America's leading cars and still growing. Send for blue-prints and specifications—or consult our engineering department.

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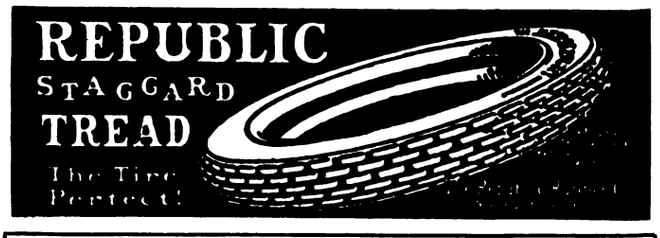
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forces the water from radiator through cylinder water jacket, maintaining rapid circulation when car is in motion. Write for descriptive matter if you handle Ford cars.

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is exceedingly easy-riding and comfortable. The straight line low slung body, deep upholstery and luxurious appointments of the Sturdy STUTZ give it that aristocratic design which lends dignity and quality to a high class motor car. Write today for advance booklet A-15 Sturdy STUTZ Announcement.

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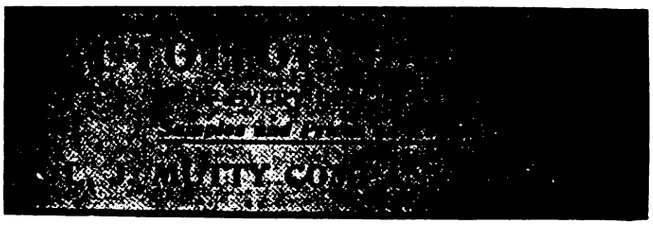
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AKRON, OHIO.

This name on Automobile Tires and Rubber Accessories signifies inherent qualities of material and workmanship that insure the maximum of service at the minimum of expense. (673)
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Magneto Plugs coax maximum power out of engine.
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SHALER Vulcanizers

Electric or Alcohol Heated

Can just as well be paying your garage rent

In the first place, they will do any kind of tire repair work. Second, they **cost less than two cents an hour to operate** and are so simple and reliable that any boy who can wash a car can make more money for you with one than could a first-class mechanic with a full equipment of tools.

When you stop to think that the material and current for a fifty cent repair cost you only two or three cents, it's mighty plain that the **Shaler** is a paying proposition. **Why, a couple of dozen repairs will pay for the vulcanizer,** and after that every repair means from fifty cents to three or four dollars added to your bank account.

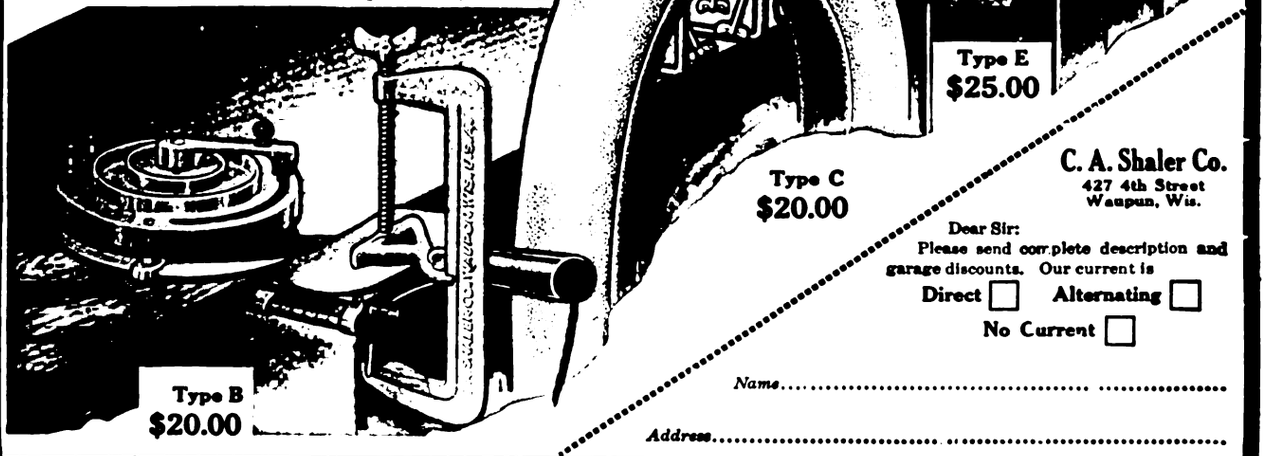
The season is just opening, bigger than ever. More tires are going to be punctured and torn than ever before. Somebody will have to repair them.

Do you want the profits on this work?

Send for Free Hand Book
And Confidential Dealer's Discount

Tells all about the Shaler and its money making possibilities—how you can add from $10.00 to $20.00 to your daily profits.

C. A. SHALER CO.
427 4th Street, Waupun, Wis., U. S. A.



C. A. Shaler Co.
427 4th Street
Waupun, Wis.

Dear Sir:
Please send complete description and garage discounts. Our current is
Direct ☐ Alternating ☐
No Current ☐

Name.....

Address.....

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For Sale—Wants—Exchange

15 cents per line of six words, cash with order: — In capitals, 25 cents per line —

A market place where Dealers, Jobbers and Manufacturers may buy, sell or trade used cars, parts and appliances and where help or situations may be secured at a nominal cost.

DON'T buy a car until you get our instructions how to get a car without getting stuck; sent postpaid $1; worth hundreds of dollars to some. ELL EMM, 667 Ocean Ave., Jersey City, N. J.

MARQUETTE 1912, $750, overhauled, complete equipment; demonstration any time. 'Phone or call DR. CUDMORE, 216 East 39th St., New York City.

MAILING LISTS AND STATISTICS
Owners or dealers; any state, county, city; weekly and monthly supplements at lowest prices. Special lists of Electrics, Trucks, Fords, Studebaker, Overland, etc.
MOTOR LIST CO. OF AMERICA,
230 News Arcade, Des Moines, Iowa.

KEROSENE FOR AUTOMOBILES.
New Model B uses successfully half and half mixture lowest grades kerosene and gasolene. Satisfaction guaranteed or money refunded. Greatly increased power, very slow speed on high. Starts easy at zero. Special agents' prices. Dept. MW. THE AIR-FRICTION CARBURETOR CO., Dayton, Ohio.

AUTOMOBILE CYLINDERS reground, new pistons and rings fitted. Garage air compressors. CAST IRON BRAZING CO., Manchester, N. H.

AUTOMOBILES AND PARTS—Largest stock ever known. Prices on anything. PROGRESS BROKERAGE CO., 527 Grant St., Buffalo, N. Y.

A PRESERVER of mohair automobile tops. Puts new body, color and life into worn out mohair. Makes old mohair look like new. PEERLESS AUTO TOP DRESSING also waterproofs leaking tops. THE COLUMBUS VARNISH CO., Columbus, Ohio.

RE-GROUND.
We carry a complete stock of re-ground bearings for immediate exchange. 'Phone Col. 5889.
AHLBERG BEARING CO.,
"The Oldest Concern in the Business,"
Room 1116, 1790 Broadway,
New York City.
2636 Michigan Ave.,
Chicago.
805 Woodward Ave.,
Detroit.

AVERY little used Packard "30" 7-passenger touring car, run but 7,200 miles; condition as good as new, looks like new; Packard service follows the car; upholstery all slip covered; has five extra casings and inners, electric side, tail, dash, and trouble lights, Kellogg four cylinder, gear driven air pump, Klaxon horn; price $2,000; reason, need the money; will demonstrate; no trades. Address W. L. McCLOUD, Sheldon, Ill.

COMPLETE list New York State registration, 50 cents per thousand names. OWNERS. AUTO LIST CO., Albany, N. Y.

FOR SALE—A 5-ton Mack truck and a 6½-ton Saurer truck, both in first-class condition and can be seen in operation; will be sold at a bargain. Apply to CENEDELLA & CO., Hollywood Ave., Crestwood, N. Y.

THE inside of my automobile top was faded, water and grease stained, and looked bad until I used PEERLESS LINING DYE. Then I had a black lining that was soft and pliable. THE COLUMBUS VARNISH CO., Columbus, Ohio.

WANTED—A mechanic with some capital to take working interest in Garage and sales agency. Fine location, well established. Address A. J. K., care Motor World.



An ad. like this will cost you $1.05 for each insertion.

These columns offer you an opportunity to appeal to an audience of 8,000 readers whose merchandising taste is being cultivated

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For Sale—Wants—Exchange

15 cents per line of six words, cash with order. — In capitals, 25 cents per line —

A market place where Dealers, Jobbers and Manufacturers may buy, sell or trade used cars, parts and appliances and where help or situations may be secured at a nominal cost.

FOR SALE—Automobile; Chalmers forty roadster, with double rumble seat; just overhauled and repainted; good condition. 1148 Pierce Building; 'phone Olive 1622; St. Louis, Mo.

FOR SALE—Six brand new Thomas radiators, 14 red inner tubes, 4 electric automobile lamps, electric drill, cylinder grinder and motor; also dynamo; 2,000 pet cocks, grease and oil cups; must sell immediately. KLEIN, 236 Canal St., New York City.

FORD OWNERS—You can increase the life of your tires 25% by fitting your car with Wire Wheels. Will also improve riding qualities of your car and make it up-to-date. Write, RACINE AUTO PARTS CO., Box 86, Racine Jct., Wis.

I MADE an old leather top, whose finish was dead, better than new leather. It was soft and the finish lasted, by using PEERLESS LEATHER TOP DRESSING for black leather only. THE COLUMBUS VARNISH CO., Columbus, Ohio.

FOR SALE—One of the largest and best equipped garages in New Jersey, doing a large repair and storage business, also a big hacking and trucking business. Fully equipped shop. This is a bargain for a hustler; it is now making big money; terms easy. Box 260, care Motor World.

ARE YOU in need of any additional help in any department of your business? Are you out of employment or looking for a better connection? Have you second-hand apparatus of any kind or do you want to buy second-hand material? Have you a factory site for sale or do you want to buy one? If so, use the Want and For Sale column of the Motor World. Seven words to the line, fifteen cents a line. Advertisements can be inserted over a number when it is desired and identity of the advertiser will be kept confidential.

RESPONSIBLE sales agents will find the Hartford Electric Starting and Lighting System an easy selling proposition. Territory now being assigned. Particulars on request. HARTFORD SUSPENSION CO., 156 Bay St., Jersey City, N. J.

PEERLESS BACK AND CUSHION DRESSING.

For leather seats and cushions. Dries hard on clean leather. The color does not come off. Renews the finish. Ask your dealer.

THE COLUMBUS VARNISH CO.,
Columbus, Ohio.

BROKEN CRANKSHAFTS, cylinders, crankcases, flywheels, gear teeth, pistons, perfectly welded and machined ready to replace. Guaranteed and references. Machinery up to 5 tons welded. ATLAS WELDING WORKS, 74-76-78 Irving St., Rahway, N. J.

SACRIFICE SALE—62nd St., near Ave. N, Brooklyn, N. Y. — $4,250. — Eight model one-family homes, taken under foreclosure, building on plots 27 x 100; containing 8 rooms, tile bath, hardwood trim, steam heat, electric lights, parquet floors; richly decorated, with laundry in cellar; built to sell at $5,500; are offered at $4,250, being less than cost of construction, on easy terms. Will take automobile as part payment. To reach property take Culver line to Ave. N station. L. W. PEASE, 2370 62nd St.; 'phone 7226 Main.

WILL maintain your car for $5.00 per month. Gasolene or electric automobiles. V. G. PHILBRICK, 2415 Michigan Ave., Chicago, Ill.

weekly to the highest degree by our articles on "Wide Awake Merchandising." Look at the cost as shown in the margins.

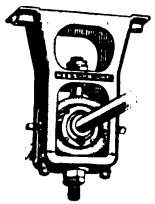


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BALL ~ BEARINGS

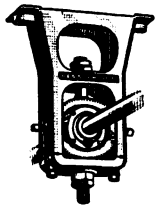
HB DWF



The Hess-Bright Manufacturing Company

Pioneers in the introduction of Annular Ball Bearings

Most extensive resources and plants in existence devoted exclusively to ball bearing manufacture. Enlarging and improving facilities, product and capacity for distribution.



Main Offices and Plant No. 2 on line of Penna. R. R. to New York

No. 59 East Erie Avenue, Philadelphia, Pa.

Stores for Retail Distribution:

PHILADELPHIA	NEW YORK	CHICAGO
666 North Broad Street	1974 Broadway	1800 Michigan Avenue



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Connecticut Requires Powerful Warning Signal

A NEW warning signal law went into effect in the State of Connecticut on July 1, 1913: "Every motor vehicle so operated shall be provided with a suitable bell, horn, or other signaling device, which shall produce an abrupt sound sufficiently loud to serve as an adequate warning of danger, but no person operating any motor vehicle shall make or cause to be made any unnecessary noise with such bell, horn or signaling device, or use the same except as a warning of danger." . . . The note of the bulb-horn is not "sufficiently loud to serve as an adequate warning of danger." It can be heard only for a short distance under the best conditions. In city traffic, on curving country roads, in windy or rainy weather, it is seldom heard. It is useless in an emergency—it is not only awkward to operate but often fails entirely when submitted to sudden pressure.

SIMILAR measures directed against the bulb horn are in operation in several other states, and in 26 of the largest cities in the country.

THE KLAXON is used by 200,000 motorists. Carried on nine out of ten high-grade cars. Regular factory equipment on 57 different makes of automobiles.



KLAXONET

Lovell-McConnell Mfg Company Newark, N.J., U.S.A.

KLAXON

"The Public Safety Signal"



KLAXON

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Studebaker

Sustained Merit Alone Can Hold Public Confidence

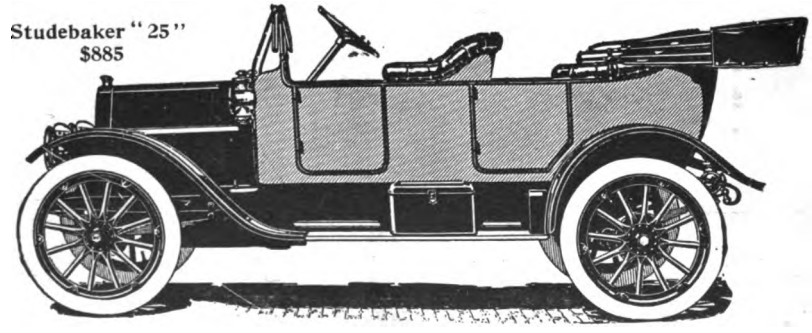
THE success of any car depends upon its standing with the general public—whether they have confidence in the car and confidence in the maker.

On this basis - there is no mystery in the almost universal demand for Studebaker cars.

The Studebaker reputation has been built on public confidence—adhering steadfastly to but one line of relationship with the public - to give them only the best always—to make Merit the only consideration in production.

And because Studebaker has always stood for this Ideal—the Studebaker car has become known as Everyman's car—as the universal car.

Progressive dealers have been quick to realize the great value to them of this public confidence in Studebaker cars—they have found that selling the Studebaker car is largely only a question of being able to meet the demand.



THREE CARS

$885 Studebaker "25" **$1290 Studebaker "35"** **$1550 Studebaker "SIX"**

All Cars Completely Equipped f. o. b. Detroit

STUDEBAKER - - - Detroit, Mich.

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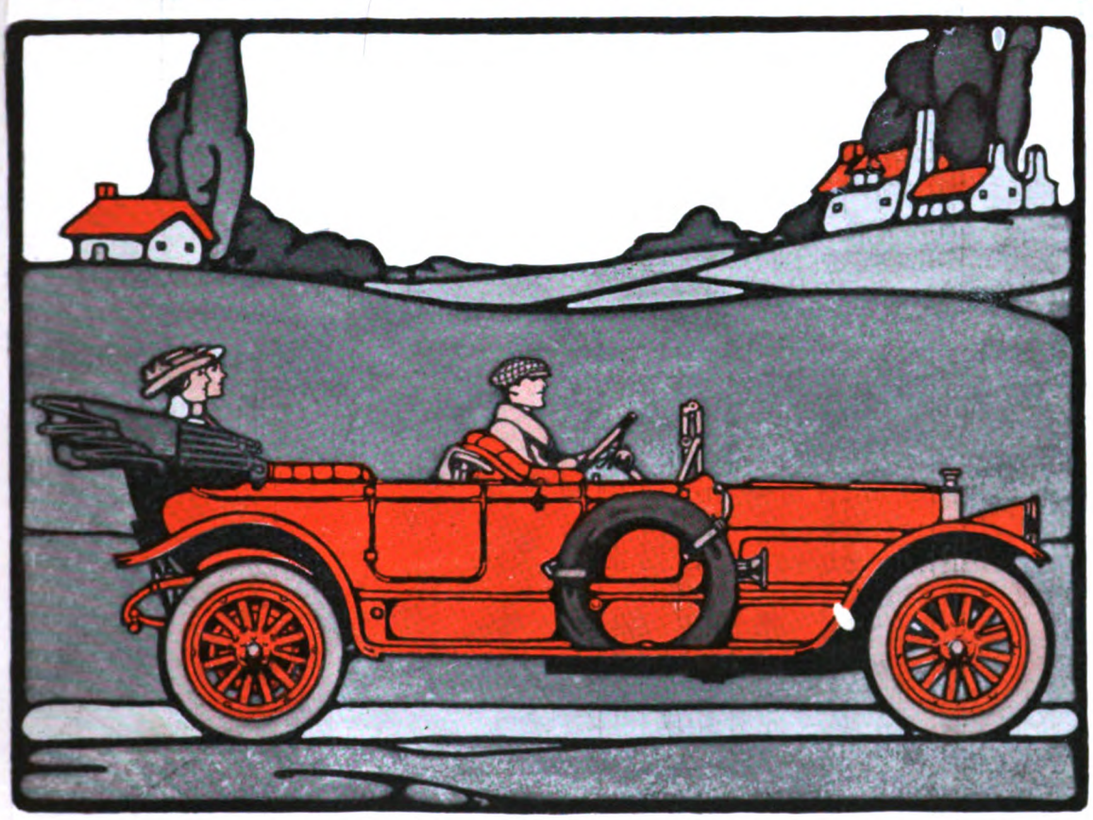
MOTOR WORLD

A Trade Paper Giving the World's Motor News

Vol. XXXVI
No. 4

New York, July 17, 1913

Ten cents a copy
Two dollars a year



NO matter what you pay for an Automobile, unless you buy with it a service that lasts as long as the car lasts, you have not made a good investment. In each city where

THE PIERCE-ARROW CARS

are sold there is a complete establishment for rendering those cars every attention they may need.

THE PIERCE-ARROW MOTOR CAR CO., BUFFALO, NEW YORK

Published Weekly by the Motor World Publishing Company, 1600 Broadway, New York

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New Automatic Truffault-Hartford has Established New Ideal in Motoring Comfort

All that the original Truffault-Hartford Shock Absorber has meant to the two hundred thousand owners whose cars are equipped with this devise—in increased comfort, greater tire mileage and greater car efficiency—is realized to even fuller extent by the New Automatic Truffault-Hartford Shock Absorber.

This latest Truffault-Hartford model gives absolute immunity from jolt, jar and vibration for any car with any kind of spring, over any sort of road.

This greater efficiency results from the three tension principle upon which the New Automatic is built. There are three separate and distinct degrees of frictional tension in this new shock absorber, each coming into play as the condition calling for its use arises.

The first tension, while very slight, is sufficient to absorb the small spring oscillations on smooth roads and produces an effect equivalent to riding in a Pullman coach over a rock-ballasted railway.

The second tension offers frictional resistance calculated to meet the change of road conditions from a boulevard roadbed to one of moderate roughness.

The third tension exercises the proper restraint necessary on exceptionally rough roads and completely absorbs the car-racking, tire-killing jolt otherwise inevitable.

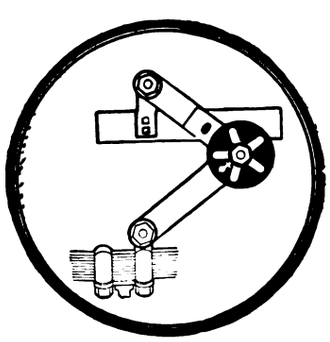
These tensions are all positively automatic in action. They respond immediately to a change in the condition of the road.

The nature of the car's spring equipment does not effect the New Automatic's efficiency. Both stiff and highly flexible springs benefit.

Like the famous

[illegible]

"The Pioneer Shock Absorber"



—the New Automatic does not detract from the car's appearance. The additional comfort it imparts wins the enthusiastic approval of your lady passengers. $60 per set of four.

Write for new catalog giving complete information of this and other models.

Insist Upon Truffault-Hartfords on Your New Car

HARTFORD SUSPENSION CO.

EDWARD V. HARTFORD, Pres.

OFFICE AND WORKS:
142 Bay St., Jersey City, N. J.

Manufacturers of Hartford Electric Starting and Lighting System

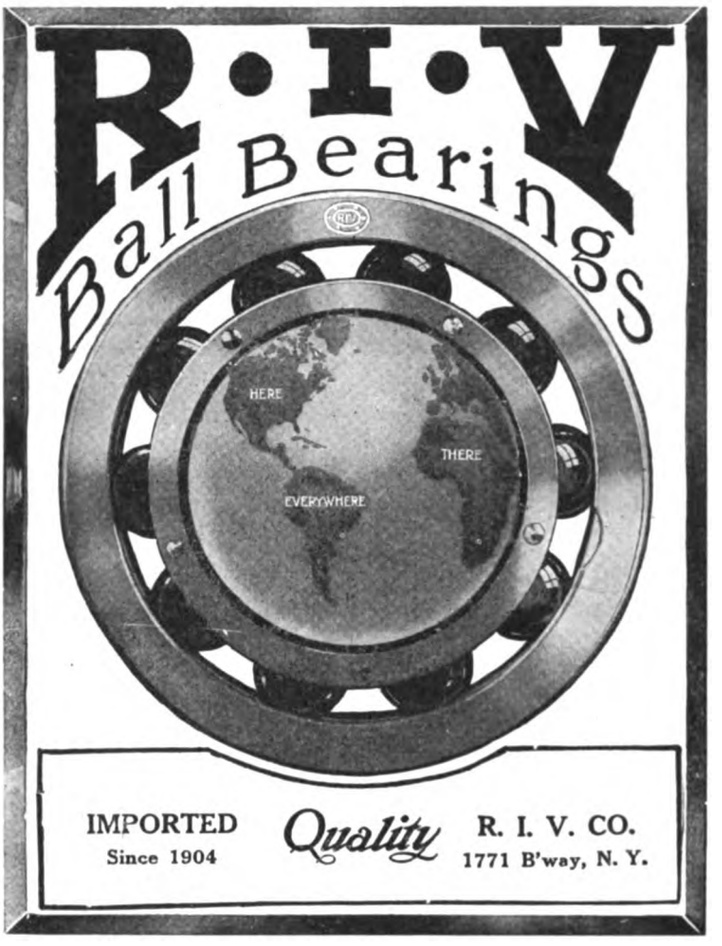
BRANCHES

New York—1700 Broadway
New York—812-214 West 88th St.
Boston—819-825 Columbus Ave.
Chicago—1458 Michigan Ave.
Philadelphia—1437 Vine St.
Newark—289 Halsey St.
Jersey City—141-143 Morgan St.
Kansas City—1524 Grand Ave.
Detroit—803 Woodward Ave.
Indianapolis—448 No. Capitol Blvd.

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San Francisco Los Angeles
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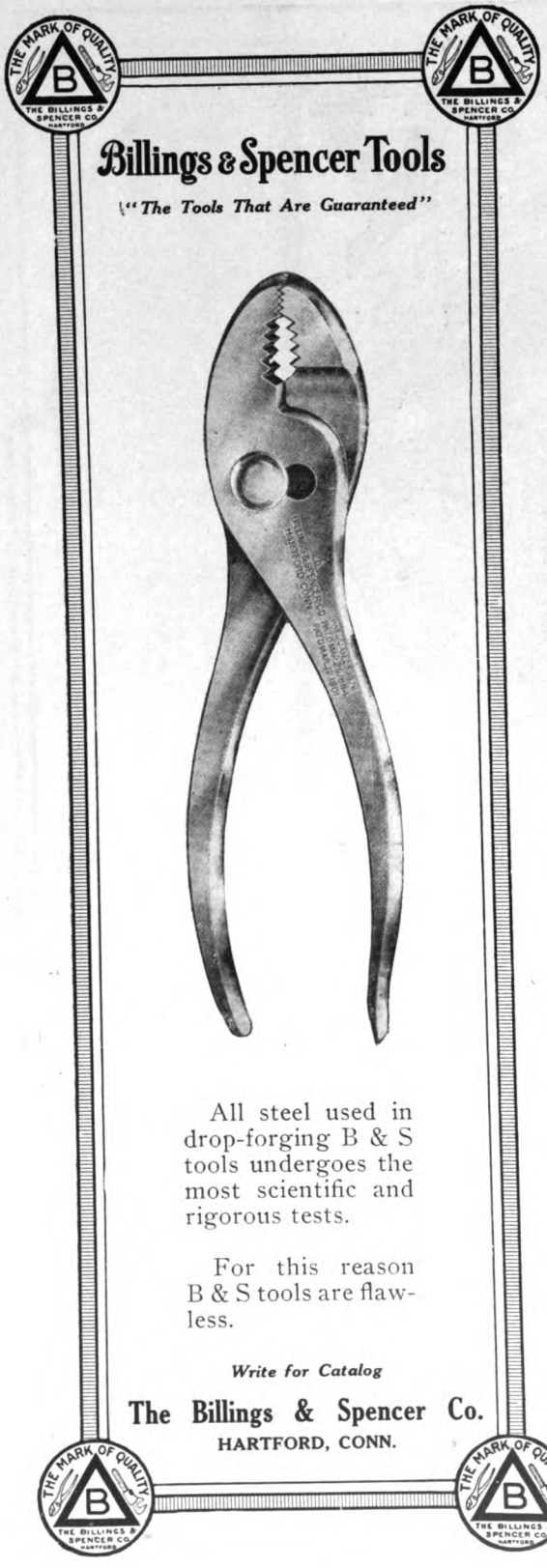
Ball Bearings count less in the cost and more in the durability of a car than anything else in its equipment. Quality and service always win in this essential feature of an automobile.

The merit of R. I. V. Ball Bearings is well indicated by the fact that they are now used by the manufacturers, dealers and motorists who have had the most experience.

These famous Ball Bearings are the "Hall Mark" of a good car and dealers are proud to call attention to them.

R. I. V. COMPANY

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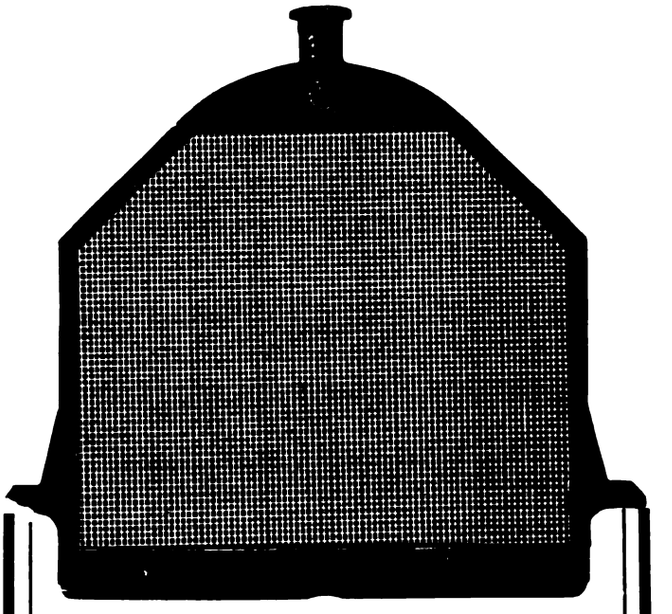
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FEDDERS RADIATORS

THE value of copper in the manufacturing of the cooling sections of radiators is unquestioned. Not only is copper an exceedingly soft, pliable metal with high heat conductivity but it is tough and strong. In addition to this copper also has the advantage of being nonporous, which is a safeguard against the development of leaks after the radiator has been in use for any length of time.

Fedders radiator cores are made of the purest copper obtainable and therefore present a degree of efficiency and durability that is unexcelled. Irrespective of what your radiator requirements may be we are in position to take care of your business in satisfactory manner. Our corps of experts is at your command. Send us your blue prints and we will submit prices.

Fedders Manufacturing Works
Buffalo, New York

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Overland

Making money for the dealer

THE business of selling automobiles has settled down to be a business. Each succeeding year brings out new and more competition. The modern automobile is as staple as steel. In 1914 dealers will find themselves face to face with competition as keen and as active as in any other staple line of business—such as hats, shoes, clothing, machinery, etc., etc.

They must therefore, by necessity, adjust themselves, their business, their way of conducting their business, and their organization accordingly. They must, above all other things concentrate and intensify their selling activities in every populated section of their territory.

The Willys-Overland Company have, from year to year, made it possible, practical and profitable for its dealers to successfully do business on this basis. The selling price and cash value of each new model has been placed far beyond competition. Each year we have been in advance, particularly from a selling standpoint, of any car made.

We give our dealers more practical co-operation, more advertising, more assistance from factory representatives, and a more saleable article than any other manufacturer in the business.

The dealer who handles the 1914 Overland will have the most rapid selling, non-competitive, and profitable car made.

Wait for our 1914 announcement; August 16th.

The Willys-Overland Company
Toledo, Ohio

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MOTOR WORLD

Vol. XXXVI New York, U. S. A., Thursday, July 17, 1913 No. 4

BRISCOE HERE FOR BRIEF VISIT; CAR NEARLY READY

His Plans Somewhat Altered and Others May Build Car in America —Will Be Made in Europe— Some of Its Features.

For the first time since he sailed to Europe in November last, Benjamin Briscoe, former head of the United States Motor Co., is again in this country. Unheralded, he arrived in New York late last week, and since that time has visited several points, some of which were the scenes of former Maxwell-Briscoe activities. At last reports, he was in Providence, but he has not permitted a searchlight to follow his movements. He will return to Paris on Saturday, 26th inst.

While the fact has been published several times that Briscoe has organized the Briscoe Bros. Co., under French laws, and at a plant in Billancourt, near Paris, has been developing a light car for the American market, it was generally believed that it was his immediate intention to form an American company for its actual manufacture. It transpires, however, that this is by no means assured; instead, it is not improbable that the actual production of the Briscoe car in America will be turned over to others.

Although it was not understood to be included in his plans, it is fairly well settled that the Briscoe Bros. Co. will make an active bid for European trade in 1914, and that the car will first be publicly exhibited at the forthcoming Paris show in October. Several of them already are on the roads around Paris and, according to reports, are giving an uncommonly good account of themselves.

In its design, the Briscoe car does not depart radically from standard practice. It embodies all of the latest ideas of the French school, but has been laid out with a view of economical production on an American quantity basis. It is fitted with a unit power plant having a four-cylinder, long-stroke block motor which, on bench tests, is said to develop 33 horsepower at 1600 revolutions. The motor is an L casting with enclosed valves, integral intake manifold and independent exhaust manifold. Its gearing provides three speeds ahead and reverse. The rear axle is of the full-floating type and long, broad, thin-leaved semi-elliptical springs front and rear constitute the suspension. The bonnet merges gracefully into the scuttle dash, carrying the gasolene tank, the fore and aft line of the car being unbroken. The new car, like most European productions, will be equipped with wire wheels.

Both open and closed cars will be manufactured, and in all probability the price of a full touring model will be less than $1,000, in accordance with Briscoe's original plans.

Square Horn Removes to New Jersey.

Having acquired an interest in the Square Motor Horn Co., of New York, Joel Weiner, of the Weiner-Barnett saddlery company, of Newark, N. J., has assumed the presidency, succeednig Sol Salvini, the inventor of the horn, who, however, retains identification with it. Following the entry of Weiner into Square Horn affairs, the plant has been removed from New York City to 312-322 Adams street, Newark, where two of the buildings comprising the Weiner-Barnett plant will be given over to the manufacture of the horn, which will be conducted on a much larger scale. Salvini, of course, has retired from the presidency, but Charles May remains vice-president and general manager.

Maxwell Prices May Be Increased.

Maxwell prices are to be advanced for 1914, according to a published announcement of the Maxwell dealers in New York City. The Maxwell headquarters in Detroit, however, will not discuss the subject, being content with the statement that prices have not yet been fixed and will not be settled for a week or more.

LACK OF CAPITAL HAMPERS WEBB; RECEIVER IN CHARGE

Full of Orders, but no Cash to Build the Fire Apparatus—Receivership Follows Creditors' Conference and Advice.

With orders in hand for automobile fire engines to the value of $373,223, but lacking the cash to build them, the Webb Co., of Allentown, Pa., last week placed itself in the hands of its creditors and, after an extended conference, they decided that a receivership was the best way out of the difficulty. Accordingly, Robert E. Wilbur, who at one time was connected with the Lehigh Car & Axle Works, was recommended for the post of receiver, the necessary application being filed on Thursday, 10th inst. A committee of five creditors will also be appointed to act as an advisory committee, as it is believed that with expert assistance it is easily possible to replace the Webb Co. on its feet.

Its assets, as rendered to the creditors, total $557,844.36, and the liabilities figure out to the same amount, as follows:

Assets.

Cash	$276.68
Bills receivable	
Accounts receivable	83,519.90
Consignment	8,508.75
Inventory	140,000.00
Plant and property	294,290.37
Deposits on purchases	18,079.16
Deposits on sales	13,169.50
	$557,844.36

Liabilities.

Bills payable	$179,204.18
Open accounts	50,949.07
Mortgage	155,000.00
Net worth	172,691.11.
	$557,844.36

Bills payable for merchandise total $45,-271 and open accounts payable $50,949. Most of the remainder are bank loans due banks in Allentown and South Bethlehem, Jersey City, Baltimore and St. Louis.

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At the creditors' meeting, John M. Mack, treasurer of the company, stated that $120,000 would be required to complete the contracts in hand, and that $30,000 promptly furnished might meet immediate needs. The creditors, however, decided that a receiver in equity was the best way out of the trouble.

Reports that the Webb Co. was seriously suffering from lack of capital have been afloat for several weeks, and for that reason the receivership is not wholly a surprise. According to these reports, John M. Mack's brother, who is interested to some extent in the Webb enterprise, had become so heavily involved by the endorsement of paper for a silk concern in which he also is interested, that his health has been almost hopelessly shattered.

Originally, the Webb Co. itself was the Webb Motor Fire Apparatus Co., of St. Louis. John M. Mack, and some of his associates in the Mack Bros. Motor Co., acquired an interest in its early last fall, after Mack had retired from the International Motor Co., to which the Mack property had been sold. The Webb plant was removed to Allentown and the present corporation formed under Delaware laws with a capitalization of $1,500,000, of which $600,000 was represented by preferred stock.

A. C. Webb, president of the original company, remained the head of the new one, the general management, however, being in the hands of Roland Carr, a new man in the automobile industry.

Blames Branch Houses for Failure.

The Grand Rapids (Mich.) Motor Truck Co., which, as exclusively stated in Motor World, failed on June 7th, at a time when it was endeavoring to effect a merger with the Michigan Hearse Co., of that city, has been formally adjudicated a bankrupt. The Grand Rapids Trust Co. has been appointed receiver, Kirk E. Wicks being the referee.

The company was removed from Decatur, Ind., about a year ago, but failed to prosper. Its officials attribute the failure to the establishment of several branch houses, all of which not only proved unprofitable but caused a heavy drain on the company's resources. The company was capitalized at $500,000. Its liabilities and assets are estimated at about $125,000.

Second Dividend for Flanders's Creditors.

As as result of the recent sale of the stock on hand, the receiver of the Flanders Mfg. Co., of Pontiac, Mich., has declared a dividend of 15 per cent., which will be shared by about 900 creditors. This payment will make 40 per cent. which the creditors have received, the first dividend of 25 per cent. having been disbursed some three months ago.

DELCO TAKES NORTH-EAST ELECTRIC SYSTEM TO COURT

Makes New York Dealer Nominal Defendant in Action Charging Infringement—Two Patents Involved in the Proceedings.

Laying the foundation of what promises to be a long drawn out legal battle in which the status of electric lighting and engine starting apparatus in the patent office is likely to be well thrashed out, the Dayton Electrical Laboratories Co., and Conrad Hubert, of Dayton, O., this week instituted equity proceedings in the United States Court for the Southern District of New York nominally against a New York dealer but really against the North East Electric Co., of Rochester, N. Y., for alleged infringement of the patents covering the Delco lighting and starting system.

Two patents are involved and both were issued to Clyde J. Coleman, who later assigned them to Hubert, who in turn granted the Delco company exclusive rights to manufacture and sell the apparatus covered by them. The patents under fire are No. 745,157, issued Nov. 24, 1903, and No 842,827, issued Jan. 29,1907.

The Sidney B. Bowman Automobile Co of New York City, is the nominal defendant in the case. Bowman handles Marmon cars and, according to the complaint, sold a four-cylinder Marmon on March 24, 1913, that was equipped with the North East electric lighting and engine starting equipment, which action, it is alleged, constitutes infringement of the Delco company's patents. Wherefore the Dayton Electrical Laboratories Co. prays for the usual temporary and permanent injunctions to restrain the Bowman company from further infringement.

Milwaukee Motor's Debts Run High.

Schedules in bankruptcy filed by the Milwaukee Motor Co., of Milwaukee, Wis., which was petitioned into bankruptcy some four weeks since, show liabilities of $340,459 and assets of $325,541. The liabilities are made up of wages $12,119, secured claims $15,600, unsecured claims $217,740 and "notes and bills which ought to to be paid by other parties" $59,000. The assets are made up of real estate $60,553, stock in trade $60,000, machinery, tools, etc., $166,569, open accounts $32,387 and minor items, including cash on hand, approximating $6,000.

Three Milwaukee banks, whose claims total $63,000, are the heaviest creditors. The other large creditors are: Racine Brass & Iron Co., $30,500; E. E. Warner, Wauwatosa, Wis., $17,500; E. G. Miller, Milwaukee, $12,800; Standard Foundry Co., Racine, $10,600; North-East Electric Co., Rochester, N. Y., $7,300.

Used Car Deal that "Kicked Back."

The man who undertakes to sell a used car at a specified price and within a specified period has something to learn, as Jas. J. Kearns, of Bridgeport, Conn., discovered last week in the common pleas court in that city. His assurance as to what he could do with a used car traded in by John D. Slady cost him $694.52. According to the evidence, Slady, on May 18, 1911, agreed to buy a Halladay runabout for $1,700. Kearns, in order to make the sale, agreed to dispose of Slady's Overland for $900 before June 1st. It was not, however, until September that he sold the old car, and then he obtained but $500 for it. Later, Kearns entered suit for $1,000, but the court gave him only $694.52.

Mitchell-Lewis Floats New Note Issue.

Having retired $750,000 of its $2,500,000 note issue, the Mitchell-Lewis Motor Co., of Racine, Wis., will take care of the remainder, maturing August 1st, by a new issue of one-year notes to the value of $1,500,000 and by a cash payment of $250,000. As was the case with the original issue, the new notes will be underwritten by the banking house of White, Weld & Co. and Geo. H. Burr & Co., of Chicago and New York, both of whom are directly represented on the Mitchell-Lewis board.

Studebaker Quits Indianapolis Retailing.

While maintaining the wholesale business controlled by its Indianapolis branch, the Studebaker Corporation has turned over its retail interests in that city and the rest of Marion county to the Brown-Rowan-Buck Auto Sales Co., which, capitalized at $40,000, was organized for the purpose. Previously, Brown, Rowan and Buck were identified with the Studebaker establishment in Detroit. Buck will be president of the new company, Rowan secretary-treasurer and Brown general manager.

Mais Redesigning Duplex Power Truck.

A. F. Mais, who designed the truck of that name and who only recently completed the development of the Studebaker commercial vehicles, is now engaged in re-designing and reconstructing the Duplex trucks, made by the Duplex Power Truck Co., of Charlotte, Mich. The latter was tied up by litigation for several years, but since it has been freed from the entanglements it is preparing to go ahead with actual manufacture. Mais's work, which already is well advanced, is one of the first steps in that direction.

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"COLLAPSED WHEEL" CASE CARRIED TO HIGHEST COURT

Cadillac Asks Supreme Tribunal to Over-rule Judge Ray's Order for Retrial—Would Curtail Long Drawn Out Litigation.

In an effort to prevent the retrial of the now famous "collapsed wheel case," in which E. Wells Johnson, of Amsterdam, N. Y., was given judgment of $10,000 against the Cadillac Motor Car Co., the latter has asked the Supreme Court of the United States to pass on the matter.

The case was brought to the highest tribunal in the effort to compel Judge Ray, of the United States District Court, to vacate his order for a new trial. The Supreme Court, however, has not yet indicated whether or no it will review the case.

As stated in Motor World of May 22nd last, the suit has taken its place in automobile history as one of the hardest fought litigations on record. It grows out of an accident to Johnson in July, 1909, at which time his right front wheel collapsed and threw him out of his car, grievous injuries resulting. He sued for $40,000 damages and at the hands of a jury in Judge Ray's court was given a verdict of $10,000.

Later Judge Ray directed that this verdict be set aside and the case retried, and it is this ruling on the part of Judge Ray which the Cadillac interests are seeking to overcome. They applied to the United States Circuit Court of Appeals in New York City for an order to set aside Judge Ray's ruling, but that court refused to do so, and unless the Supreme Court elects to pass judgment the whole case must be retired.

It is not wholly because the Cadillac company objects to a retrial that it is following this course of procedure, but because it is anxious to carry the jury's verdict to a higher court in order to have the merits of the case passed on, and it cannot do so unless Judge Ray's order for a new trial is set aside. In other words, the Cadillac company is endeavoring to save time by making a short cut through the courts, for whichever way the retrial may result, an appeal is certain, and as the evidence given in the original suit must be repeated, a rehearing will serve only to further delay laying the merits of the case before a higher court. To date, it is stated that the cost of the litigation amounts to fully $15,000.

Day Now Heads New York Dealers.

Because of the resignation of Harry M. Bronner, who has retired from the automobile trade to resume the sale of champagne in which he previously was engaged, Arthur M. Day, of the A. Elliott Ranney Co., has been elected president of the Automobile Dealers' Association, of New York. To fill the vacancy caused by the elevation of Day to the higher office, C. H. Larson, of the Cutting-Larson Co., has been made vice-president, and R. H. Johnston, manager of the White branch, has been elected a director.

To Auction Searchlight Gas Assets.

By order of the court, the assets of the bankrupt Searchlight Gas Tank Co. will be sold by the receiver, Horace B. Pearson, at auction in Warren, Ohio, August 14th next. The property includes real estate, or leaseholds, and buildings in Warren and Canton, Ohio, Chicago, Ill., Minneapolis, Minn., and Bexar county, Tex. In addition to plants, equipments and fixtures, there will be sold gas tanks, etc., valued at approximately $194,000, which are contained in Searchlight depots in various parts of the country; included in the listed assets are one automobile and 11 trucks, also accounts receivable to the value of $132,000.

Flanders's Purchasers Find a Customer.

Don McCord, one-time general manager of the Flanders Mfg. Co., has become Detroit manager of the Harris Bros. Co., of Chicago, which recently purchased the stock and machinery in the Flanders plant in Pontiac, Mich. At the time of its purchase, the Chicago company also took an option on the buildings, and are preparing to operate some of them with a view of ultimately selling the property as a "going concern." Although the receiver unavailably sought a purchaser, it was stated that the Harrises already have one in view, the negotiations being near to the point of consummation.

Lozier Now Sells San Francisco Branch.

Indicating the policy of the new management, and following the sale of its New York branch to H. S. Houpt, Inc., the Lozier Motor Co. has sold its San Francisco branch to the Bekin-Speers Motor Co., of Los Angeles, which heretofore held the Lozier agency for Southern California only. The company is composed of Milo Bekin and Frohman Speers, who will give their personal attention to the San Francisco establishment.

Southern Buggy Maker Going into Cars.

John G. Anderson, who owns the Rock Hill Buggy Co., in Rock Hill, S. C., is preparing to go into the manufacture of automobiles. His first step in that direction has been to engage H. F. Shaw, of Cincinnati, who will assume charge of the automobile branch of the business.

CYCLECARS? NOT FOR ME, DECLARES BANKER KILBORN

How Vaporish Story Linking His Name with Them Originated — Defines His Attitude Toward Automobile Promotions.

Because Horace M. Kilborn, vice-president of the big National City Bank, of New York, and some of his associates, once poured considerable money into the Orson car and some other automobile projects, and because Kilborn only recently became interested in the Dunlop Wire Wheel Co. of America, his doorstep has been badly worn by men possessed of automobile inventions, or automobile promotions, which require only those little things—capital and factories—to become million-makers.

Because of the fact, Kilborn's name during the last week or two has been associated with cyclecars, an effort being made to have it appear that he is not unlikely to throw his money and influence into a venture of that sort. On the authority of the gentleman himself, however, it can be stat-that Kilborn has not the remotest idea of doing anything of the kind.

"That cyclecar story is true to this extent," he said, when seen by a Motor World man; "a man called here with a tentative prospectus of a cyclecar company, and if I had permitted him to do so he would have unfolded figures showing the enormous profits that are possible. However, I refused to even see him or to look at his figures. The cyclecar may be a very fine article, but it is not going to separate me from any of my money. I would not go into any automobile project if they presented me with half of the capital stock."

Asked if he had knowledge of a new wire wheel enterprise which is organizing with large capitalization, Kilborn responded in the negative. "And you had better tell anyone who is thinking of anything of that sort to look up the Dunlop wire wheel patents before they go too far," he added.

General Motors Man Killed in Accident.

Howard C. Chandler, supervisor of materials of the General Motors Co., Detroit, was instantly killed in an automobile accident and his wife injured, near Pine Lake, Mich., on Monday afternoon last, 14th inst. Chandler, who was going at high speed, attempted to pass another car, but he made the turn too abruptly and, as a result, his car upset and turned completely over. One of the rods supporting the top pierced his heart and caused instant death. His wife was painfully bruised but will recover. Chandler was 45 years old.

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TIRE PROBLEM SOLVED! BY WHOM? WILSON; THAT'S ALL

Detroiters so Anxious to Buy His Stock, They Are Turned Away—The Tire and Some High-Art Painting.

They came so fast they had to turn 'em away in Detroit—it resembled "a continuous convention in session every day from 7.30 A. M. until 12 o'clock midnight." You have the word of the Detroit Pneumatic Tire Co. on this point, and as the company was taking their money and giving them Wilson Pneumatic Tire stock in exchange for it, the company ought to know.

"Yes, yes! The women came, too, and they know just about as much about tires as the men do and they also know how to pick out an investment"—this apparently was added as an afterthought.

So far as is made plain, the Detroit Pneumatic Tire Co. has not yet acquired a factory, but it does possess a "fiscal agent," and also has "on exhibition at our store a 40-inch tire which sells for $75 and it costs us only $12 to make it." The par value of the stock is $10 per share and "a great many careful, conservative business men have told" the Wilson people that they are making "a reasonable statement" when they say they "will without doubt pay from 25 to 50 per cent. in dividends the first year" they do business; "as they can sell all the tires they can make at a profit of from 300 to 500 per cent." they apparently have no doubts on that score.

All of these statements and more like them are made in spread-eagle advertisements appearing in the Detroit papers. "Fabulous Profits in Making Automobile Tires" is the big, black, eye-catching headline of one of the advertisements, in which it is declared that "the stories of the immense profits made in the manufacture of automobile tires, especially in Akron, Ohio, where nearly all of the tire companies are located, read like fairy tales; men who were working as laborers a few years ago are more than millionaires."

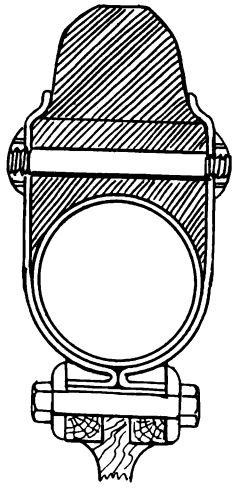
It goes without saying that the Wilson tire is the "final solution of the tire problem." It is the invention of E. Warren Wilson "some call him 'Gene'; others call him 'E. W.'"—who expended "a lot of patience in search of a cure for tire troubles." Wilson "is a Scotchman and he hunted for his cure just like most of his countrymen search for real Scotch Iverness—and he never quit until he found it."

Of course, the Wilson tire will not puncture, or skid, or blow out, or kick up dust, or injure roads, and it is suitable for any motor vehicle from runabouts to 10-ton trucks, and will last at least 20,000 miles; the Detroit Pneumatic Tire Co. itself says so.

The tire itself, mounted on a demountable rim, also of Wilson design, is shown by the accompanying illustration. It appears to be a combination of the solid and pneumatic tire principle. The rubber tread is 3½ inches thick, the inner tube being confined between a pair of steel rims and this thick rubber tread, all of which makes perfectly plain why the tire cannot puncture or blow out, or cause trouble of any sort.

Only a "limited amount of stock will be offered for sale," and the opportunity is apparently one for young men, for, listen to the lay of the stock-sellers:

"Young man, you who are earning money and carelessly wasting the surplus above your living expenses, this investment will appeal strongly to you if you will come and see what we have and carefully consider what a few dollars now invested will mean to you in a few short years. $100 saved now and invested in this stock will lay the foundation of a comfortable fortune, and the time to do it is to do it now."



WILSON'S TIRE

The officers of the Detroit Pneumatic Tire Co. are: J. W. McCausey, president; E. Warren Wilson, vice-president and general manager; T. S. Sprague, secretary; W. C. Morgan, treasurer.

President McCausey is a wholesale lumber dealer in Detroit and is also president of the Union City (Mich.) National Bank; E. Warren Wilson is the inventor of the tire; T. S. Sprague is the fiscal agent; W. C. Morgan, who was once identified with the Welch Motor Car Co., of Pontiac, apparently is the only automobile man connected with the enterprise. In addition to these gentlemen, the directors are Frank H. Watson and Arthur P. Hicks, both of whom are attorneys, and J. H. Gregg, secretary and treasurer of the Gregg Hardware Co., of Detroit.

The identity of Gregg with the project has served to strengthen it in Detroit but just when or where the actual production of the tire will be undertaken is not made clear.

"Gold Clinking" Plant Again Changes.

At the receiver's sale last week, the property of the Ohio Falls Motor Co., of New Albany, Ind., was bid in by O. E. Smith, treasurer, and A. C. Brock, secretary. They paid $15,000 for it, and also assumed the lease, which latter is valued at about $25,000. There are several liens on the property, including a mortgage of $22,800.

The Ohio Falls company represents the most recent organization of what was originally the American Automobile Co., which conducted an extravagant "clink-of-gold" stock selling campaign which caused the trade to grin and a number of stock-buyers to swear. It failed in due course and was reorganized under a slightly similar name, only to fail again. The Ohio Falls Motor Co. then acquired the assets, and in due time reached the bankruptcy court. The hoodoo which has pursued the concern has not discouraged the latest purchasers, and they propose to reorganize it once more, this time with reduced capitalization.

Paige Increases Equipment but not Price.

Except that the equipment of the Paige "36" has been materially increased, although no increase has been made in the selling price, it will be, for the coming season, substantially the same car that it his been right along; there is even less change in the smaller model—the "25"—which with the "36" forms the line of the Paige-Detroit Motor Car Co., of Detroit, Mich. The equipment that has been added in the case of the "36" includes an electric horn, Jiffy side curtains, combined rain-vision and ventilating windshield and non-skid rear tires; the price, as heretofore, remains $1,275. The price of the "25" also remains stationary at $950; for the first time, however, the smaller car may be had with electric lighting and engine starting equipment—the "36" always has had the Gray & Davis system—in which case the price is $75 higher.

Right or Left Drive on Stearns.

While not discontinuing right hand drive, the F. B. Stearns Co. hereafter will offer the Stearns-Knight cars with option of either right or left drive. The new output also will be marked by a greater variety of bodies, in all of which the straight line effect will be accentuated. The new models likewise will be equipped with electric lights and starter.

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The Week's Incorporations

Pontiac, Mich.—Tire Life Mfg. Co., under Michigan laws; authorized capital, $5,000.

Houston, Tex.—Green Taxicab & Automobile Co., under Texas laws; authorized capital, $15,000. Corporators—F. W. Crow, E. M. Weiss, W. W. Kyle.

Philadelphia, Pa.—Bigelow-Willey Motor Co., under Delaware laws; authorized capital, $50,000. Corporators—J. W. Bigelow, C. A. Willey, E. C. Benson.

Detroit, Mich.—Crary Co., under Michigan laws; authorized capital, $10,000; to manufacture gasolene engine supplies. Corporators—L. H. Kirby, C. R. Crary.

Detroit, Mich.—Detroit Automobile Exchange, under Michigan laws; authorized capital, $2,000; to deal in motor cars. Corporators—Farnsworth and S. W. Powell.

Indianapolis, Ind.—Merchants' Garage, under Indiana laws; authorized capital $15,000; to operate a garage, etc. Corporators—B. D. Christian, C. W. Dicks, C. B. Marshall.

Seattle, Wash.—Horton Motor Car Co., under Washington laws; authorized capital, $10,000. Corporators—George M. Horton, Seattle; John T. Braddock, Tacoma, and others.

Cleveland, Ohio—Ohio-Buick Co., under Ohio laws; authorized capital, $200,000. Corporators—Richard H. Lee, W. J. Patterson, C. R. Collar, G. M. Gallagher, E. M. Holmgren.

Buffalo, N. Y.—Buffalo Auto Accessory Mfg. Co., under New York laws; authorized capital, $20,000. Corporators—J. B. Cready, John T. Miller, E. S. McCready, all of Buffalo.

Washington, Ind.—City Automobile Co., under Indiana laws; authorized capital, $3,000; to buy and sell motor cars. Corporators—G. H. Drummond, L. G. Helphenstine, L. A. Knnedy.

Superior, Wis.—Carlson Bros. Co., under Wisconsin laws; authorized capital, $30,000; to deal in motor cars, bicycles, repair work, etc. Corporators—Arthur Carlson, George A. Carlson, Ture Carlson, T. C. Stene.

Philadelphia, Pa.—Mecca Automobile Society, under Delaware laws; authorized capital, $100,000; to conduct a general motor vehicle business. Corporators—C. E. Estler, F. Estler, A. Olson, all of Boston.

Cadiz, Ky.—Cadiz Auto Co., under Kentucky laws; to conduct a general motor vehicle and garage business. Corporators—John S. Crenshaw, W. H. Hammond, G. P. Yhomas, O. H. Malone, V. B. Alexander.

New Albany, Ind.—Falls City Motor Co., under Indiana laws; authorized capital, $50,000; to manufacture and sell motor cars. Corporators—Ferdinand Kahler, Sr., Orland E. South, Archie C. Brock, George R. Elder.

New York, N. Y.—Taxomobile Co., under New York laws; authorized capital, $1,000. Corporators — Abraham Snydecker, 611 West 127th street; Anthony G. Ibbeken and Louisa F. Ibbebken, both of 27 West 124th street.

Chicago, Ill.—C. & R. Garage, under Illinois laws; authorized capital, $1,000; to manufacture, sell and repair motor cars, conduct a general livery, etc. Corporators—Albert E. Cosey, K. R. Ballentine, S. J. Mathews.

Portland, Me.—Trackless Transportation Co., under Maine laws; authorized capital, $10,000,000; to manufacture vehicles of all kinds for transportation purposes. Corporators—E. E. Noble, E. V. Mann, both of Portland.

Moline, Ala.—Motor Machine Co., under Alabama laws; authorized capital, $25,000; to operate a machine shop for the repair of motor cars and other vehicles and machinery. Corporators—W. D. Bellingrath, Jas. A. Lewis, C. W. Morse.

New York, N. Y.—Ardsley Garage Co., under New York laws; authorized capital, $60,000; to conduct a garage. Corporators—Sigmund Meyer, 230 West 101st street; Max A. Cramer, 153 East 79th street; Jos. Fischer, 115 Broadway.

Brooklyn, N. Y.—Grand avenue Co., under New York laws; authorized capital, $500; to deal in motors, engines, etc. Corporators—Geo. F. Mason, 436 15th street; Fred G. H. Strohsall, 740 Greene avenue; Henry W. Bender, 328 Grand avenue.

Gibsonburg, O.—National Motor Truck & Mfg. Co., under Ohio laws; authorized capital, $250,000. Corporators—Edward C. Russell, C. H. Hutchinson, John H. O'Leary, T. T. Crosett, Frank E. Lamb, Jacob E. Niesel, Nicholas W. Russell.

New York, N. Y.—Packard Auto Exchange, under New York laws; authorized capital, $1,000. Corporators — Benjamin Eisenstein, 959 Jackson avenue; John J. Burgess, 255 West 43rd street; John S. Farran, 1271 New York avenue, Brooklyn.

Brooklyn, N. Y.—Trautman Corporation, under New York laws; authorized capital, $1,000; to engage in automobile tire business. Corporators—Evelyn M. Trautman, 191 Park place; Florence A. Webb, 227 Flatbush avenue; C. Colsten, 903 16th street.

Twombly Tells Why Shouldn't Be Taxed.

To enforce payment of the tax for 1911 on personal property, the City of New York has commenced action in the New York Supreme Court for the County of New York against the Twombly Motors Co. In reply to the complaint, Daniel S. Sherman, who is treasurer of the company, sets forth that the company is absolutely unable to pay the tax and that it never had been taxed previously on the ground that its financial organization was not complete and that it never had done business in the sense implied in the statute. According to Sherman, the company never had a bank account nor did any moneys ever come into his hands as treasurer, the accounts of the company having been kept alive directly by the principal stockholder.

Goodyear Sues Landlord for Deposit.

To compel the return of its deposit of $2,500 made at the time of the signing of the lease on its former branch at 1914 Broadway, New York City, the Goodyear Rubber Tire Co. of New York, has commenced action in the New York Supreme Court for New York County against the Junction Realty Co. On Oct. 3, 1905, the Broadway Reliance Realty Co. leased the property to the Autocar Co. of New York, which later assigned the lease to the Goodyear Tire & Rubber Co., of Akron, O., which in turn assigned to the New York company. At the expiration of the five-year term for which the lease was drawn, the Junction Realty Co. took it over but has failed to return the deposit.

Recent Losses by Fire.

Dormont, Pa.—Wilbur C. Beatty, garage and stable destroyed. Loss, $27,000.

Fall River, Mass.—D. & M. Coughlin, 178 Bedford street, garage destroyed. Loss $6,000.

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PROMINENT MEN IN TRADE WHO ASSUME NEW DUTIES

Resignations and Promotions That Serve to Place Many Workers in New Places—Few Leave the Industry.

Charles C. Munson has been appointed manager of the Splitdorf Electrical Co.'s branch and service station in Philadelphia. Previously, and for many years past, he was assistant manager of the Witherbee Igniter Co., of New York.

A. B. Willemin has been appointed director of purchases for the Hupp Motor Car Co., of Detroit. He succeeds Charles H. Brennan, who retired to set up in business on his own account as an expert appraiser of automobile properties.

Frank H. Smith, who was assistant sales manager of the Studebaker Corporation when Paul Smith was its sales manager, has followed the latter into the Lozier Motor Co. He will act as a special traveling representative, working out of the city of Detroit.

W. P. Sparks, formerly with the Archey-Atkins Co., of Indianapolis, has been appointed sales representative of the Hudson Motor Car Co. for the State of Indiana. As previously he traveled that territory in the interests of the Cadillac car, it is not strange to him.

R. F. Ketchum, formerly manager of the Mack truck branch in Boston, has been appointed manager of the branch in that city maintained by the R. & L. Co., distributors of Garford trucks. He succeeds P. C. Chrysler, who has returned to the R. & L. headquarters in New York.

Frank W. Mailing, for the past two years general superintendent of the Mais Motor Truck Co., of Indianapolis, has resigned that position to assume a similar post with the Stewart Iron Works, of Cincinnati; he will have entire charge of the production of the Stewart one-ton truck.

H. C. Whitney has been appointed Southern district manager for the Lozier Motor Co., of Detroit. He will make his headquarters in New Orleans. For several years, Whitney represented the Alco interests in the South, but more recently was connected with the Locomobile branch in Atlanta.

Omaha Taxicab Companies Consolidate.

Following negotiations which have been pending for a considerable period, the Omaha Taxicab and Auto Livery Co. and the Gray Bonnet Taxi Co. have been consolidated under the style Omaha Taxicab Co., capitalized at $90,000. Its officers are as follows: S. A. Houser, president; G. E. Douglas, vice-president; H. H. Hawke, secretary-treasurer. The Gray Bonnet garage at 2214 Farnam street will be discontinued and the business centered in the Omaha company's establishment at 1201, on the same thoroughfare.

Rodelsberger Sues for Five per Cent.

Because, it is alleged, Herz & Co., of New York City, failed to live up to their contract to pay him five per cent. of their profits during the time of his employment, Carl Roedelsberger has commenced action in the Supreme Court for New York county to compel them to do so. Rodelsberger wants $610.40, which, he says, represents the money due him, but the court has refused his plea that Herz & Co. be required to submit their books for examination by expert accountants.

Rockwell Files Bankruptcy Schedule.

The Rockwell Motor Transportation Co., of which Schuyler C. Carlton was appointed receiver in April last, has been formally adjudicated a bankrupt. Its schedule, filed last week, discloses liabilities of $23,225, of which the largest claims are those of the Swinehart Tire & Rubber Co., $1,416, and the Texas Co., $1,004. The assets listed total $9,244.56, of which $3,000 is represented by 15 trucks and $4.70 by cash on hand.

General Motors Closes a Truck Factory

Carrying out its policy of concentration at its Pontiac plant, the General Motors Truck Co. has discontinued the manufacture of trucks in Owosso, Mich. According to Owosso beliefs, however, the factory in that place will not be wholly abandoned, but later will be used for the production of parts. Meanwhile it will be closed for an indefinite period.

Firestone and Family "Doing" Europe.

H. S. Firestone, president of the Firestone Tire & Rubber Co., has joined the increasing number of automobile tradesmen who are "doing" Europe. He is accompanied by his family and will motor through France and Italy, and possibly Switzerland and Germany. He will return to Akron about September 1st.

Tenth Failure of U. S. Motor Meeting.

They are having a hard time winding up the corporate existence of the United States Motor Co. For the tenth time, the adjourned annual meeting, which was to have taken place on Tuesday last, 15th inst., failed to occur because of lack of a quorum. It has now been postponed until September 23rd.

GARAGEMEN LOSE SECOND ROUND IN SEPARATOR FIGHT

Appellate Division of New York Supreme Court Upholds Right of City to Require Separators—Garagemen Will Appeal.

For the second time, the New York Garage Association has lost its fight against the so-called gasolene separator, but, despite the fact, it probably will fight on.

The second defeat was administered on Friday last, 11th inst., when the Appellate Division of the New York Supreme Court dismissed the appeal from the ruling of the court below, which was to the effect that decision as to appliances necessary to render garages safe rests with the municipal authorities; and as the Fire Department has decreed that gasolene separators shall be installed in New York garages, in order to prevent the escape of gasolene into the city sewers, the New York Garage Association, which is backing the fight against the separator, has no small obstacle to overcome.

The organization's decision to carry the case to the Court of Appeals will probably be reached at a directors' meeting on Tuesday next.

The suit itself was brought in the name of the Joscelyn Stable Co., which operates the Joscelyn Garage, Louis J. Joscelyn being the president of the New York Garage Association. He refused to install a separator, and when he applied for a renewal of his permit early this year, and the permit being refused, he sought a writ of mandamus to compel the issuance of the permit. It is this writ which is the technical basis of the present litigation.

The garagemen do not object to any device designed to achieve the ends aimed at, but they maintain that such separators as are specified by the Fire Department are practically worthless, despite their very considerable cost of installation.

Will Sell Six Cars to Satisfy Lien.

To satisfy a lien held by the Garden Garage Co., six cars owned by the City Taxicab Co., of New York, are to be disposed of at public sale on July 31st next. One of them is a Cadillac 1910 model, the others are all Chalmers-Detroit cars of the vintage of 1909.

Smith Truck Sales Back to Factory.

The truck sales department of the A. O. Smith Co., of Milwaukee, which previously was located in Chicago, has been re-established in the factory in Milwaukee. C. W. Babcock remains its manager.

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In the RETAIL WORLD

James Barta plans to open a garage in Finley, N. D.

C. B. Craven is erecting a new garage in Carrington, N. D.

A new garage will be opened in Hancock, Md., by John Garner.

Oliver Mulvaney, of Blue Lake, Cal., is erecting a new garage.

The Wahpeton (N. D.) Garage Co. plans the construction of a new garage.

A new garage is to be erected in Mandan, N. D., for the Smith & Heater Co.

Otto Grosseth and Emil Holen, of Aneta, N. D., are having a garage erected.

Christian Henzler, of Bismarck, N. D., has let the contract for a new garage.

William Ullius and Charles Benschein have opened a garage in Manitowoc, Wis.

John Meagher is erecting a garage in Fresno, Cal. The site is on McKinley avenue.

Walter S. Burris, of Middletown, Del., has opened a garage. He also handles Ford cars.

I. L. Smith is having plans drawn for a garage to be erected in West Concord, Minn.

The A. K. Auto Supply Co. has entered the trade in Allentown, Pa., at 17 South 7th street.

Louis Drossell, of Wheeling, W. Va., is building a garage. It is located on 6th street.

D. O. Coleman is erecting a garage in Southington, Conn. It is located on Berlin avenue.

The West Coast Auto Co., of Tampa, Fla., is having a building erected for its business.

A new garage is to tbe erected in Council Bluffs, Iowa, for the Bradley, Merriman & Smith Co.

W. H. Tallis, of Tampa, Fla., is about to build a garage. He has purchased a site on Broadway.

Frederick L. Jerris is having a garage erected in Portland, Ore. The site is on 1st street.

W. G. Turner and W. Hall have leased the Antioch Garage & Machine Works in Antioch, Cal.

C. E. Mason, of Salem, Neb., has taken over the garage and implement business of Stiller & Son.

E. B. Hedley, of Philadelphia, is having plans made for a large garage at 6th street and Oak Lane.

Ira Chandler & Son, of Santa Ana, Cal., have completed a new garage. It is located on 4th street.

The McKeesport (Pa.) Auto Repair Co. is about to erect a new garage. It will stand on 5th avenue.

William Dobbert and Frank Brixious, of Manitowoc, Wis., have taken over the Split & Boettcher Garage.

Alpaugh & Lance, of Summit, N. J., will open a garage and repair-shop on South Main street, in that place.

R. A. Hendricks, of Hendricks Bros., State street, Santa Barbara, Cal., has taken the agency for King cars.

Dr. William Hake, of Grand Rapids, Mich., will build a one-story brick garage. The estimated cost is $1,025.

Albert W. Dow & Co. are about to open a garage in West Somerville, Mass. The site is at 12 Newbury street.

L. Phelps has opened a garage in Grand Rapids, Mich., on Michigan street. He will handle Cartercars and Kings.

R. L. and J. Frank Myers, of Alexandria, Va., have secured plans for a new garage. They will build on King street.

The Louisville (Ky.) Gas Co. is about to erect a brick garage at 7th street and Ornspy avenue. It will cost $7,000.

Harry Mabber, of Cando, N. D., has opened a repair-shop. He has leased the Torrey Garage for this purpose.

Robert Grider, of Bakersfield, Cal., has leased the car barns at that place and will fit them up as a modern garage.

W. C. Patch, of Cambridge, Vt., has established an automobile livery business in East Fairfield, in the same State.

J. H. Moore, of Santa Barbara, Cal., has let the contract for a garage to cost $25,000. Work will be commenced at once.

Charles E. Burnham, of Worcester, Mass., has awarded the contract for a new garage. It will be built on Murray avenue.

E. O. Weckel and William Laughery, of Springfield, Ill., have opened a garage. They are located at 403 East Jefferson street.

A new garage is being erectel in Arlington, Mass., at 348 Broadway. When completed it will be occupied by A. J. Jensen.

The Adirondack Motor Co., of Glens Falls, N. Y., has awarded the contract for a modern garage to be built at that place.

The Kleinsmith & Hemphill Automobile Co. has been formed in Joplin, Mo. It has opened for business at 6th and Wall streets.

A new building is being erected in Sioux Falls, S. D., for the Van Brunt-Bleeg Auto Co. The location is on North Phillips avenue.

The Horton Motor Car Co. has been formed in Seattle, Wash. It has located on East Pike street and will handle McFarlan cars.

The Jarvis-Bauder Auto Co. has opened headquarters in Grand Island, Neb., on 2nd street. The company will handle Oakland cars.

Charles Morton has leased the building at 207 North street, Baltimore, Md., and will remodel it for an automobile supply house.

The Magic Carbon Remover Co. has opened up in Seattle, Wash., at 1427 Broadway. W. P. Romans is a principal in the business.

The Gerlinger Motor Car Co., of Portland, Ore., has opened a branch in Seattle, Wash., on Pike street. Arthur H. Hertz is manager.

The General Motors Truck Co. is putting up a building at 19th and Arch streets, Philadelphia, to be used for offices and salesrooms.

J. B. Willoughby is about to enter the trade in Eugene, Ore. He will establish a vulcanizing and tire repairing business on 9th avenue.

John Stuben, of Omaha, Neb., has received authority to erect a brick garage at 2818 Leavenworth street. The estimated cost is $3,200.

L. H. Misner, of Petaluma, Cal., has bought his partner's interest in the Main garage and will continue the business under the old name.

C. B. Wiggins, of Champaign, Ill., has opened an automobile salesroom in a new building on Hickory street. He has the Cadillac agency.

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Oscar R. Hutchinson, of Lenox, Mass., has secured plans for a two-story, fireproof garage, 160 x 40 feet. He will operate it when it is completed.

The Gardner Auto Co., of Gardner, Mass., is having a garage built at a cost of $10,000. It will be of brick, two stories high and modern in every respect.

Elmer Halley, of Poplar Bluff, Mo., is about to open a garage and repair-shop. He has purchased an old iron works plant and will remodel it for his purposes.

E. R. Robinson and J. M. Short, formerly of Courtney, N. D., have opened a garage and repair-shop in Pingree, in the same State. The style is Pingree Auto Co.

T. J. Murray, of Elwood, Ind., has purchased the Central Garage, located on 12th street, in Anderson, in the same State. He will install a modern repair equipment.

Frank Norris has withdrawn from the firm of Norris & Blakesly, of Thomaston, Conn., and the Park Garage, which the firm operated, will be run by Blakesly alone.

Permission has been granted to N. Ledgerwood to build a garage in South Pasadena, Cal., at 1416 Mission street. The application states that the building will cost $6,000.

Fred Campbell, of St. Louis, Mo., has leased a building at 1109 Locust street and will remodel it for his business. He is an accessory dealer and now is located at 1127 Olive street.

A. L. Trachte, of Dodgeville, Wis., has sold his interest in the Iowa County Automobile Co. to his partner, F. W. Woerpel. The latter has admitted John Thomas, Jr., to the business.

Pat Lockwood has purchased the Lattner garage business in Cedar Rapids, Iowa, and will operate it under the name of Lockwood & Co. Lockwood was in charge of the Lattner garage for a year before purchasing it.

P. P. Bishop and C. A. Schmidt have taken over the garage formerly conducted by the Dubuque Auto & Garage Co., of 6th street, Dubuque, Iowa, and will continue the business under the name of the Dubuque Auto Supply Co. The garage will be remodeled and enlarged.

A. J. Diefenderfer, former manager of the Lozier branch in New York, and Teddy Hayes, who previously was in charge of the Lozier used car department, has joined hands and set up for themselves in the used car business. They have opened up at 19 West 62nd street, New York.

The Western Reserve Motor Co., 6604 Euclid avenue, Cleveland, which previously handled the Garford trucks in that city, has been succeeded by the Overland-Garford Sales Co., which hereafter will handle not only Garford trucks but Overland cars. M. L. Bridgeman, who was connected with the sales department of the Willys-Overland Co. and who became manager of the Western Reserve company several months ago, will continue to serve its successor in that capacity.

Adolph C. Hoppe, who recently retired from the Smith-Hoppe Automobile Co., of Milwaukee, Wis., which handled the Chalmers, R. C. H., and Detroit electric, has organized the Hoppe-Hatter Motor Co., which will act as State agent for the Chalmers product. C. P. Hatter, secretary and treasurer of the new concern, was previously connected with the Chalmers factory. Temporarily the Hoppe-Hatter Co. will be located in the New Mulkern Garage, at 1604 Downer avenue.

On the Trail of Munsing's Tractor.

Three judgments, totaling $4,368.04 in all, have been entered against the Munsing Tractor Co., of New York City, which about a year ago announced its intention of marketing a tractor of a character calculated to at least partially revolutionize the industry, but never got very far toward that end. Two of them—$622.45, in favor of J. H. Westcott, and $1,725.62, in favor of G. D. Munsing, who was the vice-president of the company—are for services rendered, and the third, which amounts to $2,019.96, and is in favor of C. E. Ingersoll, represents money loaned.

California Tire Project to be Enlarged.

Although the tire plant being erected in Torrance, Cal., for the Hendrie Rubber Co., of Denver, is not yet fully completed, it is stated that the Hendrie interests are about to place contracts for additions that will triple its size and capacity. For the first time, it has been made known that N. S. Ballentine, a Denver cattle and mining millionaire, is interested with W. C. Hendrie in the tire project.

Stevens Branch Opened in San Francisco.

As the outgrowth of a visit paid to the Pacific Coast by President Whiteside, a Stevens-Duryea branch has been established in San Francisco. It is in charge of J. W. Barber, former manager of the Stevens branch in Chicago. W. F. C. Zimmerman, who represented the company on the Coast during the past year, will be Barber's assistant.

Three Judgments Against Brooklyn Dealer.

Judgments totaling $614.86 last week were entered against A. W. Blanchard, Inc., the Brooklyn (N. Y.) Fiat dealer, the Standard Oil Co. of New York, whose claim amounts to $576.90, being the largest creditor. The remainder represents $17.05 awarded the Fisk Rubber Co., and $20.91 awarded the Yellow Taxicab Co.

Making Ready for Federal Parts.

The Federal Pressed Steel Co., of Milwaukee, which has completed a large plant at Keith avenue and North Pierce street, in that city, has increased its capital from $50,000 to $150,000, preparatory to beginning actual operations. It is the company's intention to conduct an aggressive campaign in the automobile parts industry.

May Make "Sixes" in Bellefonte.

If plans which are now incubating come to a head, the Bellefonte Automobile Mfg. Co. will locate in the Pennsylvania town of that name and produce what is known as the Bellefonte "six." E. R. Bloaker, of Franklin, Pa., is president of the budding concern.

Ten Years' Receipts from Importations.

During the past ten years, according to figures compiled by the New York Custom House, the United States treasury has been enriched to the extent of $10,123,427 by the importation of automobiles, which represents 45 per cent. duty on 8,774 cars; their value aggregated $22,507,615.

McKone's Kerosene Karburetter Koming.

L. J. McKone, a former automobile dealer in Oshkosh, Wis., who now is located in Santa Ana, Cal., has formed the Duplex Carburetter Co. in the latter city. The device is designed to burn kerosene and the heavier fuels.

"Sun-Lite" on Tap in Milwaukee.

The Gas Tank Recharging Co., of Milwaukee, which will employ the trade mark "Sun-Lite," has opened up at 256 Fifth street. John J. McJesley is president and Fred J. Pagels is secretary and treasurer of the company.

Reddest Month in History of Fords.

Of many red-letter months in the history of the Ford Motor Co., June was the reddest. During that period, the Detroit plant produced 22,049 cars. This surpasses the previous record, made in April last, by nine cars.

Bramwell Over the Bounding Billows.

R. B. Bramwell, advertising manager of the Michelin Tire Co., sailed last week for a vacation in Europe. He was accompanied by Mrs. Bramwell and their son.

Lee Tire Opens Branch in New Jersey.

The Lee Tire & Rubber Co., of Conshohocken, Pa., has established a branch in Newark, N. J., at 282 Halsey street. It is in charge of B. W. McCabe.

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A. B. SWETLAND, President and General Manager
F. V. CLARK, Business Manager.

EDITORIAL DEPARTMENT
R. G. BETTS, Managing Editor
S. P. McMINN HOWARD GREENE
R. W. SHERMAN

ADVERTISING DEPARTMENT
BROCK MATHEWSON, Manager
New York Office
1600 Broadway
HOWARD L. SPOHN LOUIS R. SMITH O. H. ADAMS

Western Office
1001 Ford Bldg., Detroit, Mich
W. H. TRIPP, Mgr.

Detroit
1001 Ford Bldg.
MAXTON R. DAVIES

Cleveland
610 Superior Ave. East
C. H. HANDERSON

Chicago
Room 510 Harvester Building
606 South Michigan Avenue
H. A. WILLIAMS

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BRAKES AND ACCIDENT PREVENTION.

It often has been said that the brakes constitute the most important part of the equipment of a car, and most observant persons will readily admit that there is much truth in the assertion. That they withstand the terrific abuse to which they are daily subjected is not short of remarkable. The remarkably low percentage of accidents sustained by automobiles in the ordinary course of street driving is a tribute to the perfection of this part of the machine's mechanism, as well as to the skill of drivers and their faith in the brakes.

Of the accidents that do occur, however, a considerable percentage might be avoided if drivers would school themselves to refrain from the too common practice of taking things for granted. The habit of making snapshot calculations where many factors are involved has undone many a driver and wrecked many a car.

Two sets of conditions are involved in such calculations, viz.: those within the car and those which are external to the car. The average driver approaching a street crossing that seems to offer a clear passage will approach at a considerable speed with his clutch in and the motor driving the car, placing all his faith in the brakes and his own quickness in applying them should anything appear to block the way.

Ninety-nine times out of a hundred, perhaps, he will be quick enough in kicking out the clutch and applying the brakes should this become necessary; but probably not one driver out of fifty ever gives a serious thought to the actual possibility that either the clutch or brake mechanism might fail at the critical instant, or that he himself might fail to accurately carry out his own intentions. Did he make proper use of his reasoning powers he would not begrudge the ridiculously small expenditure of time and energy required to bring the car under complete control before running into possible danger. In other words, he does not begin slowing up soon enough. Seeing, he too often thinks he has been or will be seen in time.

The way in which a driver may be misled by conditions external to his car is illustrated by an accident which recently occurred and which is only one of a number of the same sort. The driver of a light truck, approaching from a cross street an avenue traversed by trolley cars, saw that there was a car standing on the near side of the crossing and that half a dozen persons were waiting to board it. The driver's subconscious calculation that before the people could get aboard he could be across the track with a wide margin of safety would have been correct in an overwhelming majority of cases, as would his assumption that, anyway, the motorman, even if he did start up sooner than anticipated, would see the truck and act accordingly.

But it happened that just as the truck driver withdrew his head behind the side panel, the people for some reason decided not to board the car, and the motorman threw his controller around while looking backward. When he turned his head he was within ten feet of the truck, and the driver never suspected that two of the premises on which his calculation was based were erroneous until he was almost thrown from his seat by the impact.

While the automobile is a wonderful piece of mechanism and is amazingly dependable, there never was and never will be anything made by human hands that is infallible, and anyone who throws caution to the winds and depends wholly on his brakes is bound to lose in the long run.

WHAT NEXT IN REFINEMENT OF DETAILS?

"Refinement of details" has come to mean many things in many places but that it has real meaning in some places there is ample evidence. When the effort is made, there seems no limit to what the refining hand can do in adding comfort and conveniences to a car.

Electric illumination of the instrument board and of the runningboards is not new, and is rightly considered a detail improvement; but now comes a manufacturer who carries the refinement further by putting several little lamps on the instrument board so that not only all the dials are illuminated, but also the levers and the floorboards. And going still further, lenses are placed in the side lamps so that at all times a bright beam of light is thrown on each of the runningboards, while a similar lens in the tail lamp throws light on the gasolene gauge.

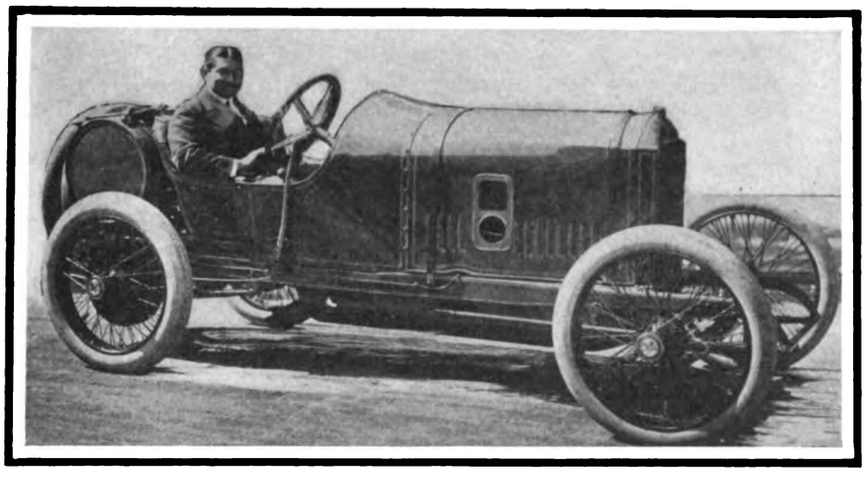
Truly this is refinement and constitutes a good illustration of the searching thought and painstaking effort that now marks the industry and which inevitably leads to the question, What next?

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BOILLOT "COMES BACK" IN FRENCH GRAND PRIX RACE

Covers 568-Mile Course with Peugeot at 72-Mile Pace Under Unusual Fuel Restriction — One Spectator Killed.

Over an extremely narrow course, half winding and half straight, that had proven the despair of all those who turned out for practice, and under fuel restrictions that caused even more despair, Georges Boillot, at the wheel of a Peugeot, for the second time won the French Grand Prix road race, which was held on the Amiens course in France on Saturday, 12th inst. His time for the 29 laps of the course, which measures 31.621 kilometers—19.6 miles—was 7:53:56, and his average speed for the 568 miles figures out at 72 miles an hour. Jules Goux, who won the 500-mile International Sweepstakes race on the Indianapolis Speedway on Decoration Day with a Peugeot, was second in another car of the same make, a little less than 2½ minutes behind the winner; his exact time was 7:56:22. Chassagne, who drove a British Sunbeam, was third.



GEORGES BOILLOT IN THE PEUGEOT WITH WHICH HE WON THE GRAND PRIX

Almost from the start of the race Boillot had things pretty much his own way, and in repeating his victory of a year ago, though it was a victory of an entirely different sort, he beat the best there is among foreign racing talent and foreign cars. The complete list of starters and the order of starting was as follows: Chassagne (Sunbeam), Bablot (Delage), Joerns (Opel), Esser (Mathis), Christeans (Excelsior), Croquet (Th. Schneider), Nazzaro (Itala), Goux (Peugeot), Resta (Sunbeam), Guyot (Delage), Hornsted (Excelsior), Gabriel (Th. Schneider), Pope (Itala), Boillot (Peugeot), Callois (Sunbeam), Champoiseau (Th. Schneider), Moriondo (Itala), W. Lee Guiness (Sunbeam), Thomas (Th. Schneider).

The race this year was almost as different from the race last year as it was possible for it to be. Last year, the contest was held over the Dieppe circuit and the distance was 956 miles, two days being required to complete the distance; the cars were placed under lock and key at the end of the first day and sent off the following day in the same order in which they finished the first half. The race was divided into two sections, and it was in the "unlimited" class that Boillot finished first, his time for the 956 miles being 13:58:02⅘, which is at the rate of 68.45 miles an hour. Previous Grand Prix races in 1906, 1907 and 1908 went to Sisz (Renault), Nazzaro (Fiat) and Lautenschlager (Mercedes), respectively.

The race this year was over the narrowest course that ever has been used for a similar purpose; in only a few places was it possible for two cars to pass, and for the most part the roads are lined on both sides by giant trees that presented an ever-present hazard. The first eight miles, from Amiens to Rheims, and starting from a point just beyond Longueau, is perfectly level and straight and it was here that the greatest speed was made; the remainder of the course is a succession of turns and twists with several right-angle corners and a genuine "hairpin" at the grandstand end. Due to the fact that the roads were not opened for practice until the last few days before the race, few of the drivers were as familiar with them as should have been the case.

But even if they had been perfectly familiar with every inch of the roads, it is extremely doubtful if any better speed would have been made, because of the unusual fuel restriction that was included in the conditions. Figuring the length of the course, only enough fuel, at the rate of a fraction over 11 miles to the American gallon; each car was doled out just 183.3 liters of gasolene at 15° Cent., which is equal to about 48.5 American gallons. Hence it was necessary for the competitors to juggle not only their speed but their fuel consumption as well. The race could not have been won without sparks, of course, and these were furnished both the Peugeots by high-tension Mea magnetos; the wheels of the cars spun 'round in S. R. O. ball bearings.

One fatality marked the running of the race. When driving at high speed, Lee Guiness and his British Sunbeam skidded to the side of the road following the bursting of a tire and struck a spectator who subsequently died as a result of his injuries; neither of the occupants of the car was hurt.



*Indicates Sanction by A. A. A.

July 18-19, Peoria, Ill.—Automobile Club of Peoria's track racemeet.

July 20, Tulsa, Ariz.—Tulsa Automobile Club's track racemeet.

July 21-25, Grand Rapids, Mich.—Grand Rapids Automobile Club's reliability tour.

July 26, Orangeburg, N. Y.—Rockland County Fair Association's track racemeet.

July 26-31, San Antonio, Tex.—San Antonio Automobile Club's reliability tour.*

July 28-29-30, Galveston, Tex.—Galveston Auto Club's beach racemeet.

July 29-31, Lincoln, Neb.—Lincoln Automobile Club's reliability tour.

Aug. 9, Santa Monica, Cal.—Santa Monica Road Race Committee's road races.

August 18-22, Milwaukee, Wis.—Wisconsin State Automobile Association's fourth annual reliability tour.

August 12, Kansas City, Mo.—Kansas State Automobile Association's reliability tour.

August 29, 30, Chicago, Ill.—Elgin Road Race Association's road races.

August 30-September 6, Chicago, Ill.—Reliability tour of the Chicago Motor Club.

Sept. 1, Columbus, Ohio—Columbus Automobile Club's track racemeet.

Sept. 9, Corona, Cal.—Speedway track races.

Sept. 12, Youngstown, Ohio — Canfield Fair Association's track racemeet.

Sept. 13, Covington, Ky.—Cincinnati Automobile Club's track racemeet.*

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15 KEEP CLEAN SLATES ON ROUTE TO GLACIER PARK

Started in Downpour, Reliability Tour Early Becomes Mud Fight that Soils Nine Scores — One Car Withdrawn.

Haberdashers and clothing merchants in the immediate vicinity of the Hotel Radisson in Minneapolis, Minn., did a rushing business in raincoats on Friday morning last, the specific reason for the "rush" being the start of the American Automobile Association's National Reliability tour to the accompaniment of a terrific rainstorm; the 24 cars that make up the procession that is wending its way to Glacier Park were started on their 1,300-mile journey at 9 o'clock in a deluge which continued during the whole of the day.

Despite the rain and the slippery, sloppy, muddy roads, however, all of the cars pulled into Alexandria, Minn., the first night stop, on time, though not all of them were so lucky in reaching subsequent halting places according to the schedule that had been laid down. In attempting to do so, nine of them came to grief and of the nine one will run no more; L. C. Nelson withdrew his Chalmers shortly after leaving Devil's Lake, N. D.

With just about half the journey completed, the scores of the 23 survivors as they were posted at Minot, N. D., the night stop after the fifth day's running, were as follows, each point less than 1,000 representing one minute lateness at control:

No.	Entrant and car.	Score.
3	H. F. Legg, Stutz	1,000
5	G. H. Voter, Metz	1,000
6	Chas. Metz, Metz	1,000
7	G. W. Metz, Metz	1,000
10	Northwest Auto. Co., Krit	1,000
14	R. W. Munzer, Hupmobile	1,000
15	R. W. Munzer, Hupmobile	1,000
17	E. B. Stimson, Chalmers	1,000
20	E. A. Everitt, Locomobile	1,000
26	——, Premier	1,000
4	L. H. Fawkes, Premier	995
8	Northwest Auto. Co., Krit	992
11	Dr. C. A. Smith, Kissel	980
12	L. C. Erbes, Velie	980
21	F. J. Lyman, Maxwell	930
16	J. A. O'Brien, Little	894
18	Dr. E.W. Humphreys, Locomobile	640
9	Northwest Auto. Co., Krit	430
19	L. C. Newlon, Chalmers	Withdrawn

Long before the tourists reached Alexandria, hopes of a real "joy ride" were shattered, and though Dr. S. E. Dutton, who has the tour under his wing, so to speak, facetiously remarked that "the roads are a cinch because they have bottoms to them," there were those who were not inclined to agree with him and among them were those who rode in the Mitchell pathfinder. Twice in two days the car skidded off the road into the ditch, and each time it had to be hauled out by a team of horses; no one was hurt, though as a result of the last deviation from the beaten — or, rather, whipped—trail, repairs made necessary the transfer of the official party to one of the Stutz entries.

Penalties allotted the first day were as follows: L. H. Fawkes (Premier), 5; Northwest Auto. Co. (Krit), 8; Northwest Auto. Co. (Krit), 70; Dr. C. A. Smith (Kissel), 5; J. A. O'Brien (Little), 87; Dr. E. W. Humphreys (Locomobile), 306; L. C. Newlon (Chalmers), 57; F. J. Lyman (Maxwell), 55; L. C. Erbes (Velie), 4.

During the second day the rain let up a little in the morning, though it came on again with renewed strength in the afternoon and the roads that were merely boggy before soon became veritable quagmires. Slipping and sliding, the cars were pushed through the mud until at the noon control the ladies in the cars deserted en masse and took up more comfortable quarters in the hotel train, which meets the tourists at noon and night stops and provides them with three square meals a day and dry beds at night. The hotel train, by the way, is proving its worth, for already work has been found for the oxy-acetylene welding plant and the automobile repair shop carried on the "garage" car. Also, the "Glacier Park Blazer," as the printed-on-board paper is styled, is appearing regularly and drawing laughs and near-laughs from those who read it.

On the second day's run of 123 miles to Fargo, N. D., the tourists struck the first fair roads encountered, and though it was still raining and the surface was slippery in spots, the "going" was better, on the whole, than it had been the previous day. In the afternoon, sticky roads again were encountered and, fearing to tackle the "gumbo," the route was changed, adding - miles to the distance; despite the addition, however, all of the cars got in on time, for there was ample opportunity to make up the loss on the broad boulevard that leads from Hawley to Fargo. At night the tourists were the guests of the Fargo Commercial Club at a smoker, and all the following day they loafed in Fargo recuperating for the plug of 195 miles—the longest day's run of the tour—to Devil's Lake, N. D.

Penalties allotted the second day were as follows: J. A. O'Brien (Little), 19; Dr. E. W. Humphreys (Locomobile), 19; F. J. Lyman (Maxwell), 24; L. C. Erbes (Velie), 16.

During the run from Fargo to Devil's Lake the roads were considerably better than had been encountered up to that time, and for the first time the tourists caught up with the pacemaker and all 23 proceeded in an unbroken string. The rain had stopped and the speed increased, and with it the dust arose in clouds and marked the passage of the fleeting cars in no uncertain manner. Chairman A. G. Batchelder of the executive committee of the A. A. A. had a painful experience during the run that he is not likely to forget for some time; as the car in which he was riding passed over an unusually abrupt obstruction in the road he was propelled upward and his head struck the top, rendering him unconscious; he was soon revived and exhibited little sign of the bump.

"The best running yet," was the general verdict when the night stop was made at Minot, N. D., after a run of 132 miles over fairly good roads and with the sun shining brightly again during most of the trtip. For the first 10 miles out from Devil's Lake the weather looked threatening, and occasional showers raised the hopes of the mudlarks; but apparently the weatherman has taken the tour into his good graces again, for a time at least. Nothing more exciting than the killing of a few gophers, which are numerous, and a little shoveling bee in a swamp hole enlivened the run from Rugby, the noon stop, to Minot, where the tourists climbed aboard the hotel train for the night.

On Saturday, 19th inst., the tour will come to an end at Glacier Park, and little of a really exciting nature is expected on the 600-mile run, which for the most part will take the motorists over fairly good roads. So far, the lights cars, the Hupmobiles, the Metz trio and the Krits have had the best of it, because of the heavy roads, and only one of them—a Krit—has been debited.

Lincoln Highway Assn. Takes Charge.

Carl G. Fisher, of Indianapolis, who originated the ocean-to-ocean highway movement, has formally turned over to the Lincoln Highway Association all of the pledges which have been received to date; they are in excess of $4,200,000.

The Lincoln Highway Association itself has completed organization by securing a charter under Michigan laws and electing the following officers: Henry B. Joy, president; A. R. Pardington, New York, vice-president and secretary; Emory W. Clark, Detroit, treasurer. The board of directors comprises these officers and Paul H. Deming and A. Y. Gowen, of Cleveland. Russell A. Alger and Roy D. Chapin of Detroit and F. A. Seiberling of Akron.

The association will maintain offices in the Dime Bank Building in Detroit, which will be in charge of A. R. Pardington. President Joy is so enthusiastic that he believes that many long stretches of the highway will be completed before the opening of the San Francisco exhibition in 1915.

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CAMPAIGNING WITH A PLAN

Methods of One Man Who Combines Banking with Selling Cars and Never "Goes Back"—Unusual Method of Recruiting Sub-Dealers.

Charles Bopp, of Hawkeye, Iowa, is a banker by profession. He also sells Ford cars. He is full of energy and believes in the theory that progress means selling two Ford cars—or even three—where one was sold before. According to this theory, he has made good. From a banker's standpoint, he has made good, too. He is a man of quick action, but he uses his brains and his pencil before he acts. In other words, he figures things in advance and thus usually knows what he is going to do before he does it.

He believes in small territory and concentration. He has a number of sub-dealers—and where he has no sub-dealer and wants one he usually gets one.

"How do you get sub-dealers in those small towns?" he was asked.

Inspiration of an Increasing Income.

"Well, often I just go to the bank and call on the banker. Like as not he has a young man working around town for $40 or $50 a month. I suggest that he start the boy in a business where he can make some real money. If he is any good at all, he can do it. One fellow I started this way took three cars as his first order. He had them sold in two weeks. In three months he had taken 15 cars. That meant a pretty good income for him. And an increasing income is a mighty fine inspiration. Where there is no bank and I cannot interest the banker or his son, or some merchant, I look for some live young man who wants a chance to make good. One of my best workers is a fellow who was formerly a butcher. I have no system; I just use common sense backed by a determination to sell just as many cars as the territory ought to have."

Stays on the Job Till it's Finished.

When Mr. Bopp makes a trip through his territory he closes business. He does not wait till next time he comes around. To-day, not to-morrow, is Bopp's motto. If a man tells him he will do so-and-so next week, Bopp tells him he won't be there next week and, if necessary, he stays on the job three or four days, in one place. He has always held that a tremendous amount of time is wasted by "going back"—and this determination of his to do business **to-day** has been an important factor in his success. It is hard to resist a man who is really determined and shows it by staying on the job. Sixteen cars sold at retail in four days is a good record for any man—and especially good for a man who has the cares of a banking business resting on his shoulders and the responsibility for a fair-sized territory besides. Work and plan — plan and work; that's how Bopp does it.

KEEPING GOODS IN STOCK AND DISPLAYING THEM FOR SALE

Keeping the goods in stock is a way of getting and keeping the business that is as old as the hills and invariably works—especially if you let the people know that you have the things they need and want.

To many dealers "keeping the goods" means having them in the stockroom under lock and key, where they are never seen except by the person who is definitely seeking a particular article.

As a result, there is never any suggestion to car owners that they buy something—there is none of that subtle influence that works on you as you pass a haberdasher's shop and makes the sale of a necktie or a new shirt or new hat to you when you had no idea of purchasing it.

And yet there is no reason in the world why the automobile owner cannot have his desire for various articles of equipment awakened in the same way. All that is necessary is to have the goods in stock and then display them by means of properly dressed windows or up-to-date show cases placed where they will be seen. Every day or so your customers come to you for the necessities, but what are you going to sell them more than they came for? That is a question every wideawake dealer and garageman should put to himself. Are you a wideawake?

WHO IS ABLE TO DEFINE "SERVICE" WHEN QUESTIONED?

The word service is much used in business nowadays and, indeed, it has become so much abused that whenever a man can think of nothing else to say about his business he begins to talk about service. Sometimes it is real service and often purely imaginary. In the main, however, is the idea and intention of giving some kind of service.

Certainly, no word ever has achieved a greater variety of shadings and meanings. The public is growing used to the indefiniteness and vagueness of this much-worked term, and it not infrequently happens that a prospective purchaser will ask the salesman to define exactly what he means by "service." Have you got it figured out so far as you are concerned? What answer would you give or do you give when asked this question? Do you know just how deep you can afford to go?

Stated briefly, "service" is taken to mean that you will give the buyer a square deal all the way through. Just where this begins and ends is a question worth much study and getting down to "rock bottom."

Who in your shop knows when a repair job is done—finished? Who checks up to see that it is right? Do you do it or do you wait for the customer to kick?

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"SIDE LINES" THAT PAY BILLS

Sale of Accessories that Helped Fore-Handed Man and How it Will Help Others, too—Turn no Trade Opportunities Away.

"I really do not know what we would do if it were not for the 'side lines.' We would make a living, of course. There is enough business for that; but the business would hardly be worth while. I was figuring the matter out the other night—and it surprised me to learn how much we were doing," said a dealer in a town of 16,000 inhabitants. "Yes, it is the side lines that keep us in business and enable us to admit that we are actually making money."

Foresightedness Worthy Imitation.

This is the idea that animates the grocer who sells seeds, paints and oils and other things in the semi-rural community. It is the idea that animates the druggist who sells cigars, ice cream soda, cameras and the thousand-and-one things like stationery, etc., which actually have no place in the drug business. It is the idea that makes the hardware man reach out and stock liberally with tire chains, spark plugs, oil cans, wrenches and the hundreds of small things that the automobilist needs and must have.

There are automobile dealers all over the country who have come to a realization of the profitableness of stocking lines that actually belong to their business, but there are still thousands who are blindly passing up the big opportunity that is open to them and is actually an important and fundamental part of their business.

"Have you got a 34 x 4 inner tube?" asked a motorist of a garage dealer a few nights ago. "No, I think you can get it at the garage on the left-hand side of the street two blocks down," was the reply.

Every day hundreds of possible sales are being missed and turned away by some similar reply. How do they fare when they come to your establishment?

HOTEL-SEEKING THAT TAUGHT DEALER A USEFUL LESSON

Neatness and cleanliness never fail to attract trade. The right kind of buyers always appreciate it. It is an outward and visible sign of correct business ideals that goes straight to the heart of the buyer whether it be of automobiles, accessories or any other merchandise.

A Chicago dealer who took a run over to Mackinac Island to escape the noise and heat of the "Fourth" had this fact brought home to him in a way that gave him a new appreciation of the advertising, business-getting value of such apparently simple things as clean windows and fresh paint.

"As we walked up the dock," said he, "we were besieged by the usual army of hotel 'runners,' each urging the claims of his particular house. As we had never been to Mackinac before, we concluded to stroll around and size up the various hotels from the outside before taking any chances.

Cleanliness Alaways Draws Trade.

"Turning to the left, we walked up the main thoroughfare as far as the Grand Hotel, which had not yet opened its doors for the season. Nothing appealed to us. Sauntering in the opposite direction, my eye caught sight of a solid-looking place, newly painted, every window clean and glistening, chairs on the verandah freshly varnished, etc. It looked good to me, but before I had a chance to speak, my wife said, 'Let's go there; it looks so clean and nice.'

"Needless to say, we went there. Every promise made by the clean, bright exterior was fulfilled on the inside. Meals were good, service excellent, rooms clean—away above par. If some of our sub-dealers had been there it would have made them appreciate, just as I did, what a force for drawing trade lies in clean windows and fresh paint.

HERE'S ANOTHER DEALER WHO MAINTAINS DECENT WASHROOM

Another dealer who provides adequate toilet facilities for customers, including mirror, clean towels, soap, nail brush, whisk broom, etc., has been discovered. It is the Foster Motor Sales Co., of Detroit. This is something a garage really owes to its customers, because dirt and grease around an automobile are, notwithstanding all the improvements, as "sure as death and taxes." It does not cost much to place toilet conveniences at the disposal of one's customers and experience shows that it makes a great hit. But an unpleasantly large number of garage keepers fail utterly to realize the fact, or if they realize it, fail to act.

WINDOW DISPLAYS HAVING THE "BETWEEN-SEASON" APPEARANCE

Many automobile stores are already beginning to wear a "between-seasons" look. That is to say, the aggressive effort to put life and spirit into window displays is noticeable by its absence. This is just the time when the buyer who has been "putting off" is liable to come to a sudden decision. Whether or not it will be your way may depend much on how your store looks as he goes by. Supposing other dealers are indifferent, won't your cars make all the stronger impression if properly and carefully and attractively displayed? Think it over and devise some plan to ginger up and put new life in your displays.

Don't be afraid to copy a good idea just because somebody else thought of it first. There is nothing really new. It always existed somewhere sometime. Like the gold that is discovered, it was always there. Make the idea yours by using it.

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ROAD CONDITIONS ENCOUNTERED BY THE "MADE-IN-INDIANA" TOURISTS ON THEIR HIKE TO THE PACIFIC COAST









1 AND 2—PHOTOGRAPHIC EVIDENCE THAT IN SOME PARTS OF MISSOURI THEY HAVE NOT YET BEEN SHOWN HOW TO BUILD IMPROVED HIGHWAYS., 3--WAITING FOR ONE OF THE MANY FERRIES EN ROUTE. 4—EVEN MUD COULD NOT SUPPRESS THE INDIANA SMILE

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"BOOST INDIANA" TOURISTS HALF WAY TO THE COAST

Brave Heights and Rains and Have Snow-Ball Battle en Route—Near-Accidents Cause Many Thrills.

The A. A. A. National Reliability tourists are not the only ones who have reached the halfway mark in their long journey, for the Hoosier tourists, representing the Indiana Automobile Manufacturers' Association, also have covered considerably more than half the distance between Indianapolis, the starting point, and Los Angeles, Cal., where they are due to arrive on August 2nd. To-night (Thursday) they rest in Salt Lake City, which is just 2,023 miles from Indianapolis, and they will remain there all of Friday, 18th inst., taking a fresh start Saturday morning for Ogden, Utah, which leg, by the way, will be the shortest one on the tour.

Although no serious mishaps have marked the trail of the "boosters," there have been many near-accidents that have caused more than one heart to beat faster. From Colorado Springs, where the tourists rested last Thursday night, to Denver, which was the next step, probably will go down as the hardest part of the trip, for what with the high altitude, which interfered with proper carburation, the narrow, precipitous roads and a small amount of rain that made the surface slippery in places, those who handled the cars had their hands pretty full. The total mileage on the run was only 69 and a fraction, according to the original schedule, but because of the great amount of improvement work that is being carried on, this had to be stretched out to more than 73—still a rather short day's run but a strenuous one withal.

All the way from Colorado Springs to Denver the tourists were escorted by a procession of some 20 cars that had traveled from Denver for the purpose; and if the tourists had had any trouble in following the confetti trail laid down by the pathfinder they would have had no trouble at all in picking the proper route because of the cars that waited by the roadside for the tourists and then trailed along behind them. In Denver, the tourists were royally welcomed by the Board of Trade, though it is likely that the best thing they saw in the mountain city was the public bath, which was reserved for their exclusive use and to which they were escorted after dinner at the Brown hotel. It was in the Berthoud pass that the greatest difficulty with carburation was experienced—the elevation is 11,305 feet—though none of the cars failed to make the climb. The ascent is laborious and, though grandly picturesque, is impracticable for ordinary tourists. Frequently grades of upward of 15 per cent. were encountered, which, coupled with the altitude, made the "going" very hard. The turns, too, were very short and abrupt and often masked by trees and rocks.

Between Denver, where the tourists remained over Sunday to make a fresh start on Monday morning, and Hot Sulphur Springs, even more trouble with carburation because of the high altitude was experienced; the total distance covered was 90 miles. Despite the name of the city, it is not as hot there as might be supposed; in fact, it is very cold. On the Continental Divide an immense snowbank was encountered, and every one stopped long enough to take part in a pitched battle with snowballs.

On the following day, the trail led for the most part over narrow ledges of rock where an error of a few feet in judging distance meant instant destruction on the rocks below. Slight rain in the afternoon run to Glenwood Springs — 104 miles from Hot Sulphur Springs—made the roads, such as they are, slippery and added to the danger, though nothing occurred to mar the day's run.

The run from Glenwood Springs through Grand Junction and Green River to Salt Lake City, where the tourists rest all day to-day, was practically a repetition of what had gone before—a succession of ascents and descents over roads and near-roads with frequent stops to permit the spellbinders to sing the praises of Indiana-made products and the proposed Lincoln transcontinental highway. Next Thursday, 24th inst., the tourists will invade California and 10 days later they will reach their desination.

To Partly Open Yellowstone Park.

After several years of resistance, the government is about to rescind its order forbidding automobiles to enter Yellowstone National Park. The new order of things, however, will not render available to automobiles the "loop" or main road traveled by the horse-drawn stages which so long have made the circuit of the reservation, which means that the latitude is extremely circumscribed and will permit motorists to traverse only the little-used roads. When they reach the "loop" they must transfer to horse-drawn carriages, or stage, or retrace their way. Most of the roads which will be opened to motor cars are rough and narrow, but army authorities who are in charge of the national reservation are widening them with a view to their use by automobilists.

ROTATING-CYLINDER AND ROTARY MOTOR CONTRASTED

Presence or Absence of Reciprocating Parts that Marks Dividing Line—Meaning of Revolving and Rotating Defined.

Due, perhaps, to a too ready disposition on the part of some persons to accept as a true definition of something a mere hazy idea in which no parts of the real definition can be found there exists no little misconception as to what constitutes a rotary engine and what constitutes a rotating-cylinder engine; there is a great tendency, particularly among laymen, to style rotary engines, as scarce as they are, as rotating—or revolving—cylinder engines, or vice versa, whereas, as a matter of fact, these two types of engine are no more alike in either appearance or construction than an automobile is like an aeroplane—in which, almost exclusively, is the rotating-cylinder engine used.

As its name implies, the rotating-cylinder engine is one in which the cylinders rotate around the crankshaft, which is stationary; the pistons and connecting rods therefore reciprocate, and this establishes the vital difference between the rotary engine and the rotating-cylinder engine, or, as it sometimes is not altogether correctly styled, the revolving-cylinder engine. Rotary used as an adjective in this sense is more correct than is revolve, for according to engineering text books, anything is said to rotate which turns about its own axis; things which turn about an axis other than their own are said to revolve, from which it follows that the actions of rotation and revolution may go on at the same time. Thus, for instance, the earth rotates about its own axis and revolves about the axis of the sun.

As far as automobiles are concerned, there is no commercially practical rotary internal combustion engine as yet, though brave hopes are held out for its perfection some time in the future. There are gas turbines aplenty—these are true rotary internal combustion engines—but they are great, heavy machines suitable only for stationary work, and though they have been brought to an astonishing state of perfection during the past few years, the limit of development has not yet been reached; there still remain several stumbling blocks in the path of inventors. The steam turbine is a true rotary engine, for there are absolutely no reciprocating parts in its make-up, and this cannot be said of any of the so-called rotary internal combustion engines that at various times have made

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their appearance and then quietly disappeared.

None of them, of a size suitable for use in an automobile engine, has been entirely free from reciprocating parts, as is the case with the steam turbine. Hence they are not as desirable as the ordinary reciprocating engine for automobile use or the rotating cylinder engine for aeroplane use, for both of these engines have been developed very nearly, if not quite, to the limit, and it is doubtful if their efficiency, mechanical or thermal, ever will be increased very much beyond its present comparatively high level.

Both rotary and rotating-cylinder engines have been used to propel automobiles—it would be difficult to discover any one kind of an engine that has not at one time or another been actually tried or suggested for trial in an automobile—though neither has amounted to anything. Probably the rotating-cylinder engine never will be used, to any extent at least, for automobile work, for the vertical reciprocating engine has been found quite satisfactory. But, if a true rotary internal combustion engine minus all reciprocating parts should be developed, which is not unlikely, it is highly probable that a new era in automobile construction would commence from that day, for not only would size and weights of parts be considerably decreased, but vibration, the bete noir of the average designer, would be positively eliminated.

Hardened Oil Which Affects Valves.

The action of valves sometimes is interfered with by a ring of hardened oil which collects just above and below the actual valve seating, and occasionally holds the valve off its seat for an instant if the stem is a trifle loose in the guide. The remedy by scraping off the deposit is obvious. It is not safe to assume that because there is nothing on the contact face of the valve and seat that all is well; there should be no deposit anywhere near the valve. It not infrequently happens that the gummy stuff looks a good deal like the rough iron, but a touch with a scraper or screwdriver will show the difference.

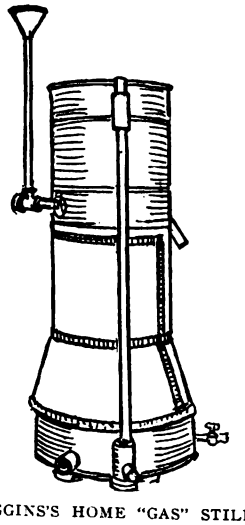
Bad Effect of Oil on Insulation.

Because oil has a disintegrating effect not only on rubber but on cotton and fabric as well, care should be taken to see that the wiring for electric lighting and engine starting systems is well protected. If oil is permitted to remain on the wiring, the insulation will in time be so softened that the slightest chafing will cause the bare copper to be exposed and a short circuit or a leakage of curren will follow and it may be an extraordinarily difficult leak for even an expert to discover.

PERFECTS STILL TO MAKE HOME MADE MOTOR FUEL

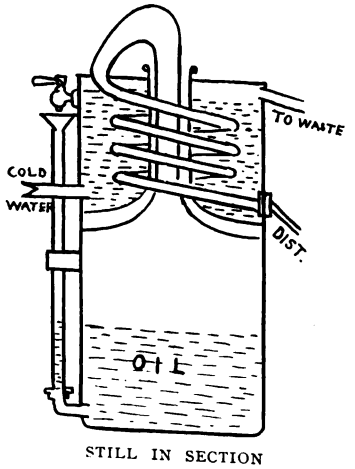
British Device Makes 3½ Gallons of Gasolene from Four Gallons of "Crude"—How It Operates.

The high cost of gasolene, or "petrol," as it is styled in England and on the Continent, has been directly productive of several proposed substitutes; it has stimulated



HIGGINS'S HOME "GAS" STILL

the efforts of inventors to perfect some sort of a device or mechanism that will make possible the use of kerosene; it has resulted in the offer of a prize of no less than



STILL IN SECTION

$100,000 for a successful alternative fuel, and now it has been responsible for the development of a pocket-size still with which the motorist can make his own "petrol" and thus bid defiance to the oil barons. With it, it is said, any one can readily convert four gallons of crude oil into 3½ gallons of perfectly good motor fuel in two hours. Two views of the apparatus in its entirety are shown herewith, the part sectional drawing showing the construction of the device. The crude oil is placed in the lower receptacle and the burner beneath it, which may be operated with either crude oil, gasolene, kerosene or gas, then is lighted.

Thereafter the operation of the still is automatic, no further attention being required. Already, it is pointed out by the manufacturers — Wm. Higgins, Ltd., 38a Quill Lane, Putney, London, S. W.—quite a demand for the home still has sprung up and 100 a day are being disposed of. In England the price of the apparatus is £3, which is equivalent to about $15, and the American price, which includes carriage, is $20.

Where Graphite Will Help Starters.

Greater perfection of operation of those types of electric engine starters in which the gears on the electric motor shaft are slid into engagement with gearing on the periphery of the flywheel generally can be brought about by placing a small amount of graphite paste upon the motor pinion. The engagement of the gears thus will be facilitated, and their operation will be less noisy. Only a very small amount should be used, however, or it is likely to work along the shaft and get into the motor, where it might cause a short circuit; graphite is an excellent conductor of electricity and will play havoc with insulation.

Deceptive Indications of Leaky Plugs.

Leaky plugs, though scarce, can cause a lot of trouble that is very difficult to trace; they will make a motor miss at high speed, or on heavy pulls, but will permit it to run quite properly, to all intents and purposes, under ordinary conditions. The principal trouble is cracked or porous porcelains which permit the high tension current to ground without jumping the spark gaps. The only remedy is to fit new plugs that are known to be in good condition and to be careful not to crack the porcelains in tightening them in the cylinders.

Overheating that is not Chronic.

It is a mistaken idea to assume that a motor that has once overheated sufficiently to boil the water in the radiator is ever afterward particularly susceptible to the same trouble, for this is not so, provided, of course, there is nothing functionally wrong with the cooling system. One thing that would make it "steam" again would be a shortage of water in the jackets and radiator due to the previous overheating.

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AVOIDING "GOLD BRICK" AIR IN SELLING CARS

Salesman Must Act as if He Believed in His Car and Must Carry Himself as if He Were Not Apologizing, Says Reilly—"Be Just as Good a Business Man as Your Prospect and Make Him Think So."

How Reilly did it no one was ever able to find out, but one day during their vacation at the lakeside farmhouse he succeeded in rousing the Sales Manager from his berth under the apple tree and in inducing that factory functionary to row the two men and their wives across the lake to what Reilly said was a "pretty little gorge where natural gas bubbled up in the creek and would burn if it was lighted."

The Sales Manager remembered the row he had had not long before "around the next point" and he flatly refused to row at all unless Reilly could stand on the lakeshore and point out so everyone could see it the gorge in question. Luckily, Reilly could do this and the salesman played motor again.

"You can afford to row," said Reilly. "You haven't been doing anything but sleep under that apple tree for more than a week."

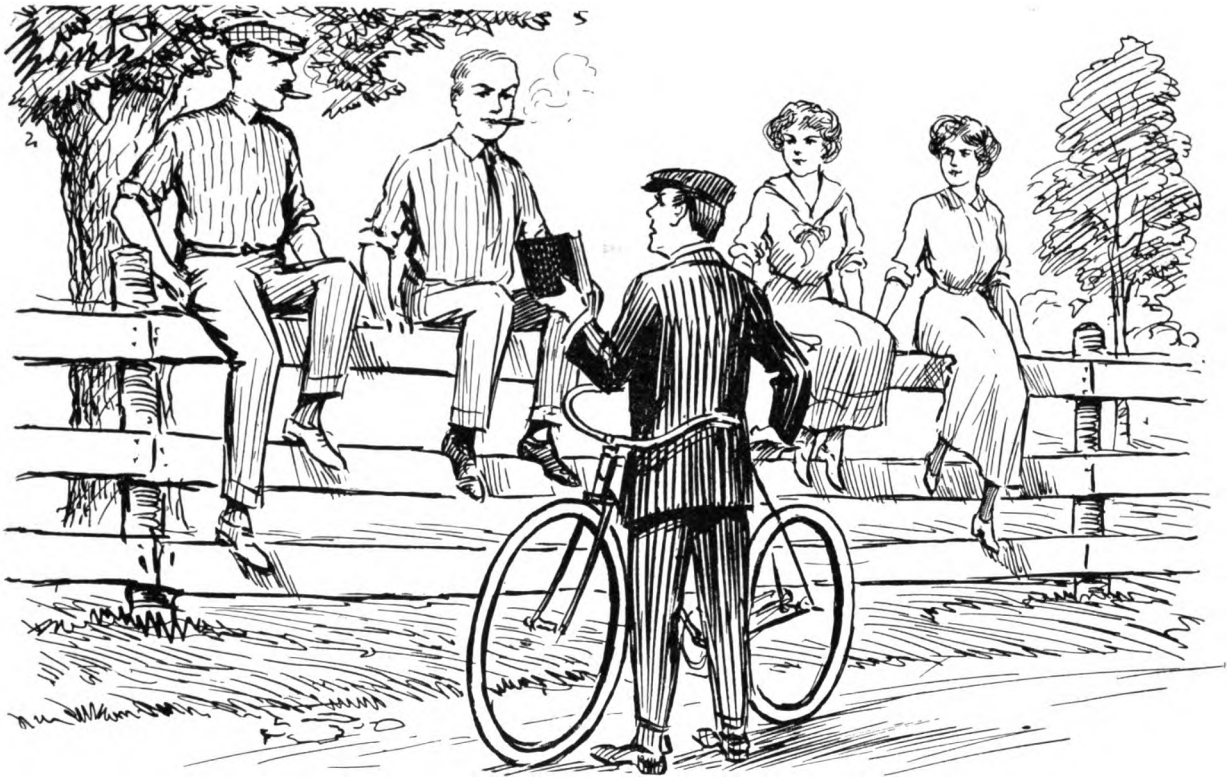
The gorge proved just as Reilly said; the only disadvantage was that it was cool and abounded in flat rocks and several times it took the combined efforts of the trio to pull the Sales Manager off a cool, flat rock and make him climb the gorge. But he did climb it after a while, and when the quartet emerged at the top and looked down upon the lake and valley the Sales Manager grudgingly admitted that the tramp was partially worth while—especially since he had found a flat-topped board fence in the shade of another apple tree and was roosting there, to the discouragement of the others, who wanted to go back.

"Oh, there you go again! Can't sit still or rest a minute, can you?" he expostulated. "Why can't you sit down a few minutes? Here!" This was addressed to Reilly, at whom the Sales Manager thrust an inviting-looking cigar. Reilly yielded to temption and the four, like county fair railbirds, ranged side by side on the fence.

"Bet he's a book agent."

"Magazine solicitor."

These guesses were hazarded in order with rapidity by Reilly, the Sales Manager's wife, Mrs. Reilly and the Sales Manager as a youth appeared a quarter of a mile away upon a bicycle, just leaving a farmhouse.



"A BOOK ENTITLED——" BEGAN THE YOUTH AS HE PROCEEDED TO UNFOLD A LEARNED-BY-ROTE TALE

He had that certain appearance of being out to sell somebody something, and the guessers waited with expectancy till he pedalled up.

"Warm day," said the youth, as he dismounted and approached the quartet of railbirds.

"Hadn't noticed it," replied Reilly.

"What are you selling?" This from the Sales Manager's wife.

"A book, entitled——" began the youth, and he proceeded to unfold apologetically a learned-by-rote tale of the virtues of his piece of literature. When he was all through he asked if anybody wanted to buy one. They all said no, for they hadn't intended buying in the first place; but if they had, the I-aven't-much-confidence-in-it-myself air

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of the agent would have caused whatever intention they may have had to go fluttering away. The agent apologized for having taken their time and cranked up his bicycle.

Apologetic Bearing that Kills Sales.

"Anybody'd think he was trying to gold-brick us, the way he acts," remarked Reilly, who gazed down the road to where the youth had stacked his bicycle against the front gatepost of another farmhouse.

"He acts like the last salesman who came in and said he knew you and wanted a job," jibed the Sales Manager.

"Who was that?" asked Reilly.

"Oh, I don't know; there isn't a week goes by any more that some salesman or fellow who wants a job doesn't come in and say he knows you. They all seem to think that's a recommendation."

"It is." And Reilly puffed his chest and gave his cigar an upward tilt.

"Oh, I know who you mean; he does know me, for he used to work for me," exclaimed Reilly.

"Did he? I might have hired him—how long did he work for you?"

"Let's see," said Reilly, counting on his fingers; "Six, seven, eight——"

"Eight years!" exclaimed the factory man.

"No!" almost yelled Reilly. Eight days—and that was eight too many."

"Eight years!" he continued. "I should say not! If he stayed with me eight years I wouldn't have any business."

"What ails him? He acted afraid when he called on me."

"I don't know what you call it," replied Reilly, "but he lacked something or other. He seemed to think he wasn't as good as the next man and that he ought to apologize every time he tried to sell a man a car. He had this gold-brick feeling in the back of his nut and he couldn't get over it. I tried my darndest to brace him up, but there was nothing doing."

"How'd you get him?"

Lack of Self-Confidence a Failure.

"He walked in and wanted a job and I gave it to him," said Reilly. "Then, a week later, I took it away from him. He has the same trouble that many other salesmen, or would-be salesmen, have. He didn't seem to be able to act as if he had any confidence in the thing he was selling. He couldn't brace up and act as if he was just as good a man as the man he was talking to, and he had a slouching, slinking little way with him that made it easy for a man to turn him down right at the start.

"I suspected his make-up before he had been with me two days. To start with, I wasn't favorably impressed with him when he came in to ask for the job. Instead of throwing back his shoulders and walking in as if he was somebody he—I can't say he cringed or came slinking in, but he lacked that aggressiveness which might lead a man to think he had some punch and ginger in his system. But I was able to use an extra man right then on some used cars I had in stock and was anxious to move, and I thought I'd give him a chance; he acted, anyway, as if he needed the job and he seemed glad to get it."

"Did he sell any cars?"

"Not a one. I gave him a couple of prospects that I thought would be easily landed with used cars and turned him loose, but he didn't make any more headway than you would have made coming up the gorge if we had let you have your own way. He reported back on each of them that the prospects were certain they would not buy cars this season.

Positiveness and Conviction Needed.

"I thought I'd get a line on him and find out just what he was, so I tipped off an old friend of mine, who is a sort of Mogul in a sales office in our town, and told him I was going to send this fellow down to sell him a car, just to try him out. My friend said, 'All right, send him along.' I sent him along, and after he reported no results I got in touch with my friend and asked him what ailed my salesman. 'What were you trying to do—unload a lot of junk on me?' he asked. 'Certainly not,' I said, 'that was a good car.'

"'Well, you'd never know it to look at your salesman,' he answered. The salesman—so my friend told me—half apologized for bothering the prospect, and then told him the proposition he had to offer; but all the time he was talking he didn't look the man in the eye once for more than a second at a time and he shifted around in his chair as if he felt he would be committing a crime if he succeeded in getting the prospect's money in exchange for a car. He didn't put positiveness into his sales talk, either. For instance, if he wanted to say 'Then I will give you a demonstration to-morrow?' he would say, 'Then you won't want a demonstration?'

"There are two ways of saying a thing: one smacks of postiveness and the other of negativeness; one assumes that the prospect has practically agreed to the question and the other intimates that you are giving him a chance to say 'no.' And if you haven't got the prospect far enough along to want to say 'yes' he's going to say 'no' every time. This lad killed his sale before he got it started."

"Didn't he believe in the car?"

"The son of a gun, I asked him that one day," declared Reilly. "I asked him if he believed we had a good car—a car that was worth all we asked for it. He said 'yes,' of course; what else could he say? But his 'yes' had a very funny sound to it. It lacked conviction. It wasn't convincing.

Killing the "Gold Brick" Attitude.

"I asked him, too, if he thought he was as good a man as I was—not as good a salesman, but as good a man. He said 'no.' I told him that until he got it into his head that he was just as good a man as I or any other man he never would sell cars or get anywhere else worth mentioning.

"'What do you mean?' he demanded.

"'I mean just this,' I said, 'that you can't talk to your superiors with any degree of effectiveness. Now, you are wandering around the country with the idea that you are the inferior of everyone you come in contact with, and that if they give you any time or attention they are doing you a favor. Maybe you're right and maybe you're wrong, but you have got to act under the assumption, when you go in to call on a business man, that you are a business man, too, and as good a business man as he is.

"'You haven't got to slink in as if you were going to sell him a gold brick. We don't sell that kind of thing here. We sell a car that's worth every dollar we ask for it, and every man who buys one of our cars is a customer of ours and we keep him just as long as we can. No man who buys a car of us do we have to avoid afterward; he's our friend, and if we can't sell him on that basis we don't want him to have a car. If you sold a car I'll bet you'd be afraid to meet the man on the street the day after. Your attitude's wrong. Brace up and ask yourself why you aren't just as good as the next man.'"

"Did he?"

Aggressive Sales Manner Attainable.

"Oh, he said a man once told him to get up in front of a looking glass and look himself in the eye and talk to himself. He said he had tried, but that it didn't do any good, and I had to let him go."

"Do you think a man like that can be improved — educated to sell aggressively?" asked the Sales Manager.

"Certainly," replied Reilly. "I have known quite a few women who were troubled that way when they first tried to sell goods, but who——"

"Mister Reilly," said the Sales Manager's wife, with the emphasis on the "Mister," "will you please stop talking and pull my husband off that fence."

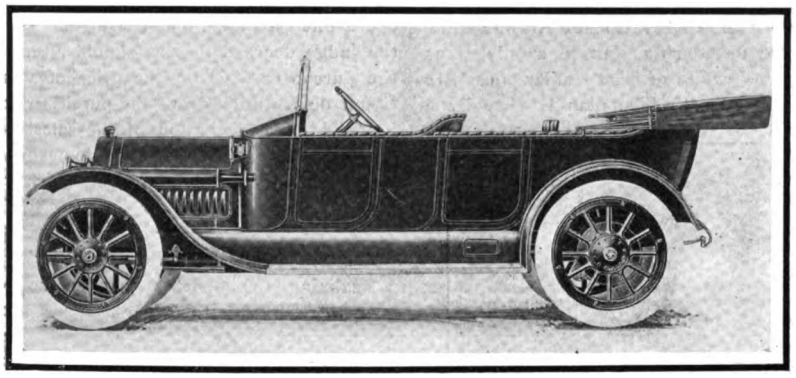
"Home, James!" And Reilly, looking threateningly at the Sales Manager, pointed to the mouth of the gorge. Whereupon the Sales Manager, groaning like a horse wallowing through a snowbank, ambled into the rocky defile—only to sit down on the first cool, flat rock.

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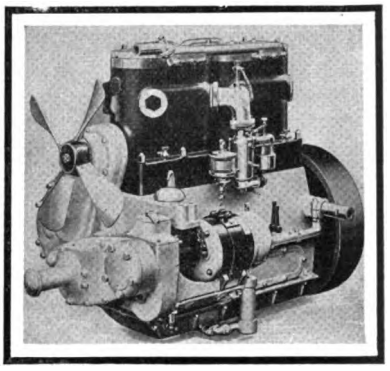
FIRST LYONS-KNIGHT CAR HAS MANY IMPROVEMENTS

Factor of Safety Increased Throughout and New Engine Oiling System Adopted—One Chassis and Five Bodies.

Following its acquisition of the Atlas Engine Works of Indianapolis, Ind., and in March last the announcement of its intention to take up the production of complete cars as well as Knight sleeve-valve engines—the latter under one of the four American Knight licenses acquired with the Atlas business—the Lyons-Atlas Co. of Indianapolis, Ind., has made good its promise and its first car, produced under the active supervision of Harry A. Knox, who left the Atlas Motor Co. of Springfield, Mass., when it was thrown into bankruptcy to take up the management of the Lyons-Atlas Co., has made its formal appearance. As was stated would be the case at the time of Knox's withdrawal from his Springfield company, the new Lyons-Atlas car is quite like the Atlas-Knight was during its brief existence.



SIDE VIEW OF FIRST LYONS-KNIGHT TOURING CAR



COMPACT LYONS-KNIGHT MOTOR

In adopting the Knight type of sliding sleeve-valve engine, however, the Lyons-Atlas Co. has not been content to let well enough alone, so to speak. Which is to say that, while the familiar Knight principle is employed without the slightest disguise, the design of the engine has been revised to include the latest developments in both American and foreign practice. Consequently, in several minor details the Lyons-Knight engine differs from other Knight engines.

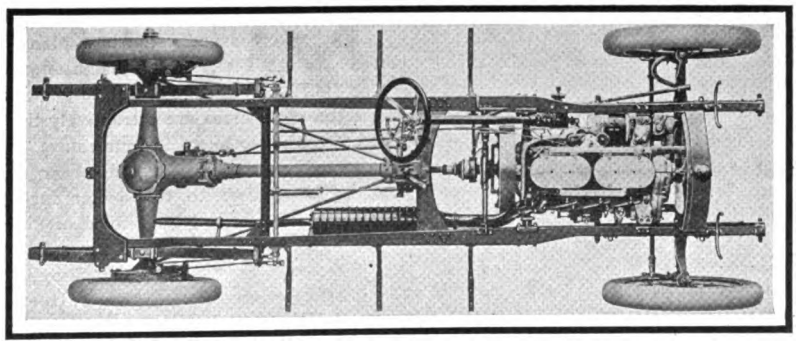
The bore and stroke of the engine are 4½ inches and 5½ inches, respectively; the piston displacement therefore is 349.9 cubic inches, and though the A. L. A. M. rating for that bore is but 32.4 horsepower, it is a pretty well established fact that Knight engines, or any other kind of engines, for that matter, have little difficulty in considerably exceeding such conservative ratings; 50 horsepower is given off at 1,200 revolutions.

The specific differences between the Lyons-Knight engine and any others are that the relative travel of the reciprocating sleeves has been increased, thus affording better sealing of the ports, and their fillets and lugs have been made larger than is usual, in order to increase the factor of safety; the walls of the sleeves, too, are slightly thicker, and thus the possibility of distortion under extreme temperature changes is practically obviated. Another point of difference is in the oiling system; splash has been eliminated, and in its place there is a positive pressure oiling system interconnected with the throttle lever in such a way that the amount of oil fed is proportionate to the power developed by the engine. Oil is fed under pressure to all the moving parts, including the pistons and sleeve parts. The oil reservoir is contained in a sub-base beneath the crankcase with an intermediate air space to prevent undue heating of the oil.

Cooling is by centrifugal pump-circulated water in conjunction with a large cellular radiator, and gas is supplied by an improved form of double jet carburetter set close to the intake ports on an exceptionally short induction pipe. Ignition is by high-tension magneto operating a dual system. Needless to add, the engine is electrically started and the car is lighted by electricity; the system used is the Northeast.

In appearance, the Lyons-Knight engine is quite like other Knight engines, of course, its exterior being free from the various parts that characterize the poppet valve motor and everything being neatly finished in black enamel and nickel. One interesting feature of design is the enclosing of the tops of the cylinders, together with the spark plugs, by means of polished aluminum caps which effectually keep out dust and dirt and protect the plugs from accidental injury.

In the transmission elements of the car, power is transmitted by means of a three-plate clutch contained within the flywheel; the central member is very thin and light and is of large diameter to afford the maximum of friction surface; it is faced with Raybestos. The change gear mechanism is of the sliding selective type providing three speeds forward and reverse, and is operated by the orthodox hand lever placed in the centre of the footboard; it is located very close to the seats and, as its travel is quite small, it offers no hindrance to either side entrance.



PLAN VIEW OF LYONS-KNIGHT CHASSIS SHOWING TRANSMISSION ELEMENTS

The gearset is located on the rear axle and angularity between the engine and the rear axle is compensated for by two large

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Spicer universal joints. The rear axle is of the full-floating type with a special bronze housing of unusual strength to obviate the possibility of damage through collision witih rocks in the roadway. Drive is through a worm gear underhung, the road clearance being nine inches. The propeller shaft is enclosed in a substantial torque tube connected forward to a cross frame member through a large hollow ball and socket joint.

Two sets of brakes, both compensated, as a matter of course, are provided, and both are mounted on 16-inch rear wheel drums. The service brake is pedal operated and the emergency brake is operated by lever and either may be adjusted easily and quickly from the outside. The frame is a pressed steel channel section 5 x 4 with a six-inch drop at the rear and is carried on semi-elliptic and three-quarter elliptic front and rear springs, respectively. Wheels measure 37 inches in diameter and are shod with 5-inch tires carried on demountable rims; the standard tread is 56 inches and the wheelbase is 130 inches for all body types. Between the top of the worm gear casing and the frame there is a hydraulic shock absorber which reduces sidesway to the minimum and operates as an efficient rebound snubber.

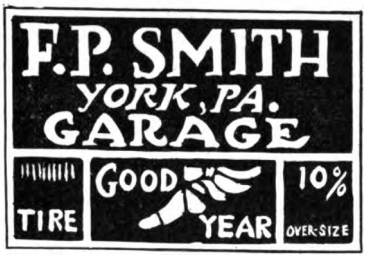
Conforming to the growing tendency, the gasolene tank is placed beneath the deep skuttle, thus providing a short, direct gravity feed to the carburetter; the capacity is 22 gallons, of which two gallons are held in reserve. The steering gear, which is of the irreversible type, is mounted at the left side and is topped by an 18-inch rubber wheel; the column is braced to the dash to ensure rigidity. Shafts in the steering gear column are hardened and ground steel and all bearings are bronze bushed. Steering connections are made with bearings having hardened and ground bushings and studs.

The bodies of the Lyons-Knight cars—four- and five-passenger touring, Sedan and Berlin—have been designed for utility and with a careful eye on beauty of outline. They are constructed of sheet aluminum, which provides for lightness and strength, and are more than ordinarily roomy; the rear seat of the touring models, for instance, measures 52 inches across and the cushions are very deep and soft; standard colors are dark blue and Brewster green, with black upholstery.

Equipment includes a Golde "one-man" top made of black Pantasote, with side curtains and dust cover; built-in windshield of a special type, in which the top glass portion is wider than the lower portion and both are adjustable; Warner speedometer and clock; combination tire holds and trunk rack at the rear; robe and foot rails; cocoa mat; electric lighting and engine starting system; two-tone electric horn, and the usual complement of tools, spare parts and so forth.

Sign Scheme That Saves Expense.

Of the value of road signs to the garage proprietor there is no doubt, for it is fair to say that the garage which introduces itself to the traveler is the garage that will attract the bulk of the tourists' trade; it is a matter of simple logic. Really enduring signs, however, cost more money than many garagemen are willing to invest for even such enduring advertising, but as a means of inducing more of them to do so, the Dealers' Service Bureau of the Goodyear Tire & Rubber Co., of Akron, Ohio, just has perfected a plan to supply signs at a mere fraction of what similar ones have cost in the past. The plan is virtually a



GOODYEAR DEALER'S SIGN

co-operative buying propostion whereby all the orders for signs received by the Goodyear company are lumped and passed on to the sign maker at the same time.

Thus he is enabled to make the signs up in quantity at considerably less expense than for only a few signs. Under the old method, each dealer's order for signs was filled separately at the rate of $68.21 per 100 signs, whereas under the new plan the net cost to the dealer per 100 signs figures out at $14.79—a clear saving of 82 per cent. The signs themselves are attractively lithographed on heavy metal in four colors. The upper portion, and by far the larger portion, is given over to the dealer for his name and address and his choice of either of the two announcements, "Garage & Service Station," or "Automobile Supplies"; the lower portion, as is shown by the accompanying illustration, serves for the Goodyear company's "ad."

First Aid Stations and Signs Combined.

By way of killing two birds with one stone, municipal authorities of the township of Port Sunlight, in England, have adopted the unusual plan of combining sign posts erected for the direction of motorists and "first aid" stations in one. On each sign post at a dangerous place there is a cabinet containing a stretcher, bandages, surgical instruments, splints, medicine and other various appliances and drugs that generally are to be found in ordinary "first aid" cases.

Feminine Influence in Body Building.

It long has been known that women exert a mysterious influence that has been known to change the destinies of nations. That same influence, coupled with the vagaries of feminine fashions, is likely to alter the shapes of motor car bodies, for in the French courts a judge has ruled that it is the duty of the builder in supplying a car to take into account the fact that long plumes now are being worn on ladies' headgear and to make provision for them. Because one particular builder did not do so the judge decreed that he should return to the purchaser $200 on the price of a car. Count de Kergorlay was the purchaser and he sued for cancellation of the sales contract because the countess's plumes were injured when she rode in the car, which was a closed one.

Bronze Check for Carburetter Service.

Realizing the benefits that accrue not only to users, but to dealers, from a good service system, the Motsinger Devices Co., of Lafayette, Ind., has developed a plan whereby an agent who installs a Motsinger carburetter gives the owner a card which is exchanged at the factory for a bronze check bearing the carburetter number and date of installation. This check entitles the owner to free carburetter service at any Motsinger station for one year. As the carburetter is of simple construction, having only one adjustment and that manipulated from the dash, it is not anticipated that the service plan will cause the agents to be overrun with work.

Making It Easy for the Truck Drivers.

The State of Illinois is laying itself out to become a mecca for motor truck drivers, if there is any significance in House Bill No. 287, which recently has been passed by the legislature. The bill provides that "drivers of commercial motor trucks shall be protected by windshield and hood from dust, wind and inclement weather." Drivers of motor trucks who have had any experience with Illinois winter weather — Chicago's brand in particular—no doubt will give the bill heartfelt endorsement.

Rubber Tubing Injured by Display.

Rubber tubing and the like that has been exposed for some time in the sunlight and heat of a show window is apt to be rather the worse for the lack of protection, and is not likely to be nearly as good as rubber that has been properly protected by being kept in cool, dark places.

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FANNING LIFE INTO THE APPARENTLY DEAD SALE

The Salesman Who Went—or Started—to Europe to Sell a Car—Difference Between Getting Healthy Man to Breathe and Saving Man Who Sinks for Third Time—Doing What "Couldn't Be Done."

"The only hard sales are the ones you don't get," said a dealer who likes to have as few "hard ones" as possible on his record sheet.

Some salesmen can make sales that "come easy"; others are especially adept in cutting down the margin of "the ones I didn't make." Many a salesman or dealer has gone as far as he could with a sale and when he failed to complete it has wondered if some other man could have "pushed it over." Rescuing sales which have been given up as lost may be said to require able effort, and in this connection it may be said that Cass, a sales manager, and Gray, a salesman, one of whose sales was described in Motor World last week, probably have as enviable a record as any other dealership house with "sales that were pulled from the fire."

Assigning the Difficult Case.

Cass at one time had under his direction a youthful salesman who had not attained high efficiency, and since the names Cass and Gray are not the true ones his name may be said to be Baer. One of the prospects who found his way to the list maintained by this dealership establishment was an eminent physician of the city, ranking within but one or two notches of the top in surgical circles. Baer had been assigned to sell this doctor a car and had made many trips; each time he reported little progress, but Cass sent him back again and again and again, believing that with proper salesmanship the surgeon could be placed on the owners' list.

One day Baer returned to the office to report on this prospect and said to Cass, "There's no use trying to sell Dr. Gregg a car; he's going to Europe to-morrow." Gray, the star salesman, was writing at his desk nearby and he overheard what was said; maybe he was anxious to be given this difficult task, but if so he said nothing and kept on writing, the while he could feel the cold, gray eyes of Cass burning into his back.

"Gray, did you hear what Baer said?" asked Cass.

"I heard him say something about the doctor going to Europe."

"What would you in a case like that?" asked Cass.

"If I wanted the sale bad enough and couldn't do anything else I'd go to Europe with him."

Baer greeted this with a loud guffaw.

"What are you laughing at?" demanded Cass.

"At Gray going to Europe; no doubt he'd like the trip."

"Would you like to handle this sale?" asked Cass.

"Certainly."

"All right, go ahead," directed Cass.

Gray walked to the cashier's window and asked for $100, received the amount and started out the door.

"When will I hear from you?" asked Cass.

"To-morrow morning before I start," replied Gray.

Camping on Trail of Prospect.

When Gray reached home he stopped to think what he should do: he was certain he would do something, but hadn't yet decided what. The first thing to be learned was when the surgeon was to leave town and on what train, wherefore he telephoned the physician's office.

"This is Mr. Gray, of the ——— Motor Co."

"I'm entirely too busy; I ahven't time to talk with you now," replied the physician.

"But, one minute, please," replied Gray, who was under the disadvantage that the prospect could terminate the conversation any time he wanted to by hanging up the receiver. "On your trip you will have quite a lot of time to yourself, and I would like to have you take a catalog with you. I would like to have some one give one to you when you take the train in the morning."

"I don't object to that," replied the physician.

"When do you leave?"

"At 8.10, from the Central Station, for Brandburg," naming a city a couple of hours distant.

"I thought you were going to Europe?" said Gray.

"I am," was the answer. "I perform three operations in Brandburg to-morrow; my wife joins me there, and we go on from Boston and sail from there."

Gray was at the railway station in the morning and he watched carefully to see if the physician took the train. When he made sure the prospect was aboard Gray, too, climbed on and proceeded to locate his man. As the train was pulling out of the city Gray saw the doctor leave his chair and go to the smoker, where he sat down and unfolded a newspaper. Gray had succeeded in getting the prospect in a position where he had more time to talk than had yet been the case throughout the conduct of the sale.

Sales Wedge Effectively Entered.

As the physician settled down to read Gray stepped up in front of him and was recognized.

"Where are you going?" asked the doctor.

"Brandburg."

"Is that so? I'm going there, too."

"Yes, I knew it," replied Gray. "You're going to perform three operations there to-day and then you're going on to Boston."

"Do you mean to say that you took this trip just to see me?" asked the physician.

"Yes, sir."

"You needn't have done it," replied the prospect. "But it's good business—good business," he added.

Gray succeeded in engaging the doctor in conversation and talked car under very advantageous conditions until they reached Brandburg, where they left the train, and by this time were on such terms that the physician, though he had not been brought to the buying point, was becoming favorably disposed. After lunch the surgeon asked Gray if he was interested in surgery, and the salesman truthfully answered that he was and told the doctor of several operations he had seen.

What Diplomatic Strategy Accomplished.

"Maybe you'd like to come over to the hospital and see some of my mechanical work?" he said.

Gray hastened to accept the invitation and, aside from being with his prospect, saw three of the best pieces of surgical work it is the good fortune of laymen to witness; also, the price of the afternoon's work would buy several cars. After the operation, the doctor invited Gray to take

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lunch with him, and over the cigars and coffee the professional man asked Gray how far he would go before he would go back without an order.

"Well," slowly replied the salesman, "it isn't so far to Boston and, of course, if all the passage on the ship was engaged I could follow on the next one."

On the train Gray had informed the physician that his object in making the trip was to secure a little of the doctor's time when he was not overwhelmed with work, since he realized that so eminent a surgeon was an extremely busy man.

Argument that Closed the Sale.

"You are going to Europe," argued Gray, in substance. "You will want to enjoy your trip. If you do not buy a car before you go you will have it on your mind all the time you are gone, as one of the trivial things which must be attended to when you get back. There is no question but that you need a car, and if you come back without having placed your order you are immediately going to find a vast accumulation of important work into which you must plunge, and all the time you will have on your mind this detail and will have no time to attend to it.

"The chances are you will be so busy you will continue to use your old car; you will continue to drive around the city in it and it is now nothing much more than junk and is depreciating in value rapidly. Jolting around that way is injurious to your spine, as you are well aware, and the arrangement will be very unsatisfactory to you. Now—if you place an order before you go and will wire me when you land in New York or Boston, I will have your new car meet you at the railway station and the only worry you will have will be your gasolene bills. Also, during your absence I can dispose of your old car for you and, I believe, get at least $200 more for it by this method and at the present time than I can after your return."

"That sounds logical," was the physician's comment.

"I suppose your happiness will be complete if I give you an order, won't it?" asked the doctor in a good-natured way.

"No, only 50 per cent. complete," answered Gray.

"How so?"

"Because," and Gray smiled, "the other 50 per cent. will be in assuring your happiness and content of mind when you return."

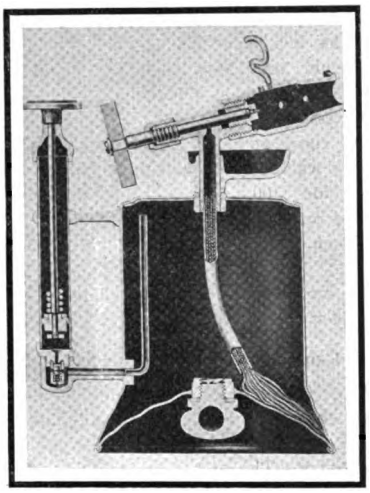
The doctor laughed. "All right; what do you want me to do?"

"Sign the order," said Gray, "and give me $1,000 deposit. And one thing more," he added; "instruct your secretary that when the wire comes that you have reached New York I am to get the balance on the car, for I can't roll it off the floor without the money; that's a company regulation which I must observe. In that way you will have your new car waiting for you when you leave the train."

The physician did as requested and Gray went back to town. In the morning when Cass arrived at his office the order and deposit lay on his desk.

Westinghouse Develops Improved Torch.

By way of increasing the field of usefulness of the gasolene blow torch, which is put to so many uses in the average garage, the Westinghouse Electric & Mfg. Co., of



WESTINGHOUSE GASOLENE TORCH

market a new torch in which a number of Pittsburgh, Pa., just has placed on the improvements and refinements have been made; it is styled the Universal torch. To facilitate lighting in windy weather, the drip cup is made rather larger than usual and the burner is more than ordinarily substantial, so that it will retain its heat and prove effective in cold weather or in a brisk breeze. Another excellent feature is that the burner is self-cleaning; the hole is cleaned automatically by the movement of the needle, thus obviating the necessity for picking at it and endangering the valve seat; this seat, by the way, is a separate replaceable plug. The valve handle is made of fiber which is a non-conducter of heat, and the material is calculated to withstand almost any amount of abuse without cracking. The tank of the torch, as is made plain by the sectional picture, is of unusually heavy metal and therefore will not dent easily; it is practically impossible to puncture it. To ensure the perfect seating of the pump valve, the plunger operates in a guide and the whole mechanism can be taken apart quickly and easily for repairs. The torch is supplied in both pint and quart sizes, the illustrations showing the larger size.

Valve Lifts as Sources of Trouble.

Anything that tends to push a valve to one side, or lift it by applying force in any way except centrally, is liable to cause unequal and abnormal wear of both stem and seating. For this reason the end of the stem and the top of the lifter or tappet should be true and square and make perfectly even contact, which cannot be done if either is unevenly worn. This is a little matter that often has made trouble that has been ascribed to other causes. In one instance, a motor manufacturer went to the trouble of enlarging the stems of his valves and using larger guides, because there was excessive wear of the stems, whereas all that really was needed was better lifter construction—a fact that was discovered later on, after the trouble had been taken and the unnecessary expenditure made.

To Keep the Finger Nails Clean.

When working about a car on jobs that necessitate a good deal of dabbling in dirty oil, the stuff gets under the finger nails and is extremely difficult to dislodge. Prevention is better than cure, however, and if a little soap is scratched off a cake and worked under the nails before beginning work the oil will not get far and its removal will be an easy matter. A very effective method of getting oil under the nails so that it is almost impossible to get it out is to wash the hands in kerosene while they are oily. The kerosene carries the oil further under the nails.

Common Cause of Fan Breakage.

A cause of fan breakage that is rather common is the running of the fan when it is considerably out of balance, which results in setting up stresses that the sheet metal often will not withstand. If a fan does not trun true it should be made to do so by bending back into position the blade that has been bent, or bringing the circumferential wire or band into shape if it has been distorted. Often a fast-running fan, if much out of balance, will set up a noticeable vibration of its own, which is hard on the fan bearings as well as the fan itself.

Wrongful Use of Steering Wheel.

The not uncommon habit that some drivers have of turning the steering wheel by short, quick jerks is not conducive either to good driving or to the welfare of the steering gear. A steady, continuous wheel movement is not difficult to acquire, with a little practice, and, besides, it looks a good deal better than the spasmodic twitching that so often is seen.

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FASTENINGS AND FIXTURES FOR REAR SPRINGS

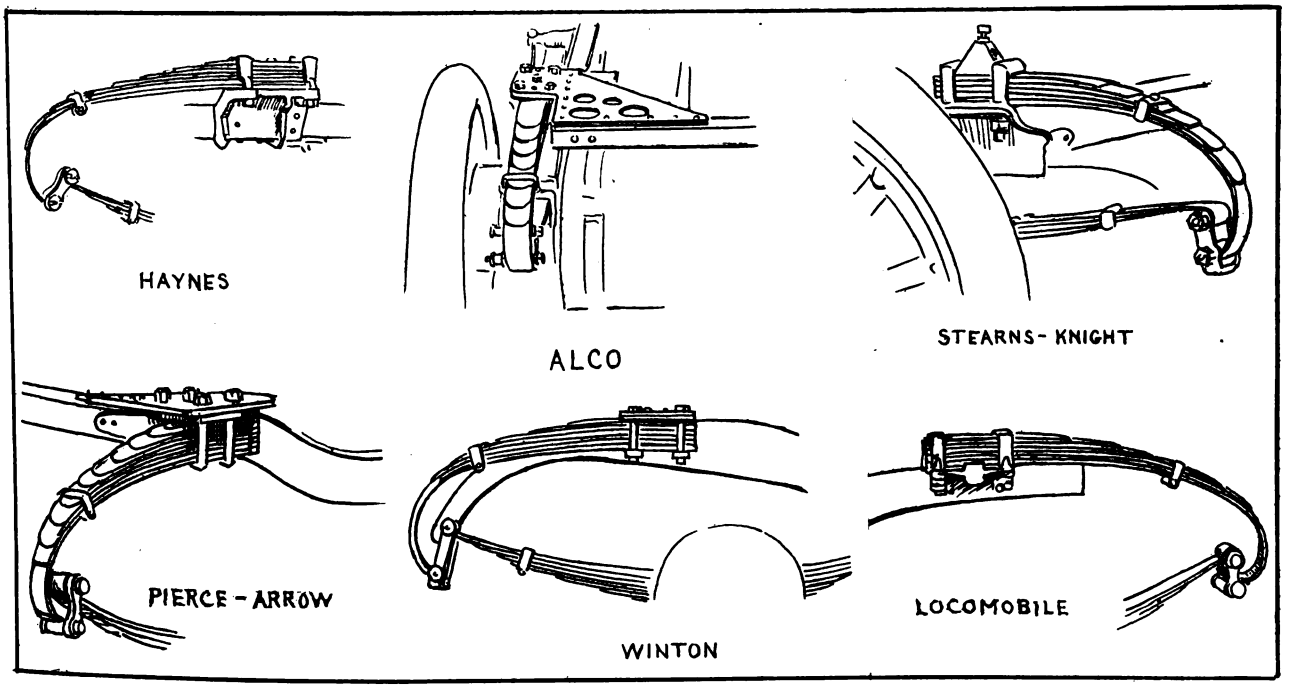
Various Methods of Attachment Necessitated by Various Methods of Springing —Detail Differences Due to Individual Ideas—Hangers That Serve Double and Triple Purposes; Others That Serve But One.

There are not a few parts of the automobile that no one ever seems to talk about. Not that they are unimportant, or that they do not bear a fair share of the work of keeping the car intact, whether that work be of the active order or is merely passive, but because for one thing they are more or less out of sight and consequently out of mind, and for another they are among the parts that never seem to give any one any trouble and so are not open to much comment or criticism. No one seems to have any difficulty in making them quite good enough to stand up, no matter what may befall the rest of the car, so no one ever has any particular reason to examine them; nine car owners out of ten don't know what they look like on their own cars, and when the machine finally becomes so decrepit that it no longer is of any use as an automobile, these unassuming components probably go to the scrap heap in just about as good condition as when they were built into the brand new car.

Hidden under the fenders and behind the rear wheels and coming well within the class of parts that work unseen—they have no reason to blush, even if they could—are the varied devices that serve to secure the rear springs to the frame of the car—that is to say, whatever part of the rear spring is permanently and rigidly anchored. There is such a wide variety of forms of springs, of combinations and arrangements of different forms of springs, of frame shapes that influence spring form and spring support, and so on, that it is obvious that there must be no little variety in the spring anchorages. Starting with the springs themselves, there are half-elliptic, three-quarter elliptic, seven-eighths elliptic and full elliptic, besides single cross or transverse springs, three-platform springs and cantilevers. Each involves some special form of anchorage because of its particular form and the way in which it distributes its stresses, and besides this there are the individual variations due to frame construction, to the personal ideas of designers and to the method of transmitting driving stresses—that is, whether the drive from the chassis to the body is through the springs and, consequently, through the spring fastenings, or through torque or radius tubes or rods.

There are not a few types of rear spring suspensions in which there is no rigid frame anchorage for the spring, strictly speaking, every point of attachment being either pivoted or shackled. Usually, however, there is at least one rigid fastening, which may be either on the frame or on the axle, according to the design and construction of the suspension, and in some cases there are rigid fastenings at both points. By a rigid fastening is meant one which permits no relative movement between the spring and the member to which it is attached. Pivots, shackles and the like permit relative movement, while ordinary clips do not.

A form of rear-end support for the rear spring that at one time was quite commonly used is that in which the rear end of the side frame is extended rearwardly to form a horn carrying an eye for the rear shackle bolt; a variation of this is the curved horn or gooseneck answering the same purpose. With the increasing employment of three-quarter elliptic springs, however, this ar-



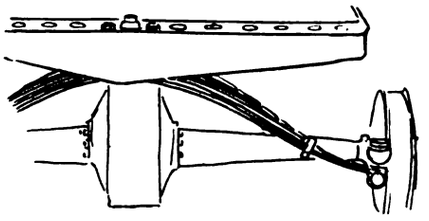
VARIETY IN THREE-QUARTER ELLIPTIC SUSPENSIONS AND IN METHODS OF HANGING SPRINGS

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rangement is becoming far less common that it was. The upper quarter of a three-quarter elliptic spring is very often clipped or bolted to the frame through the intermediary of a bracket or its equivalent, the general effect, when seen from the side, being that of an extended frame.

Bracketing Three-quarter Elliptics.

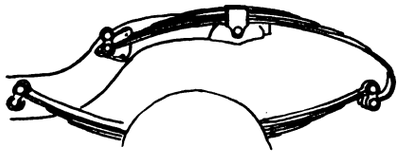
In the case of the Winton car, in which the rear springs are three-quarter elliptic the rear ends of the main frames are extended backward, but not to carry the springs;



HUPMOBILE CONSTRUCTION

they carry between them the big rectangular gasolene tank. The stub ends of the upper spring members are clipped under the extending ends of a transverse plate riveted to the top of the frame at the rear end, the plate not only serving to hold the springs but also to stiffen and brace the rear of the frame. Two clips are employed, spaced well apart to withstand the leverage of the always prying springs. Incidentally, there is no bolt, and consequently no weakening bolt-hole, through the center of the spring, the leaves being held in their proper relative positions by "nibs" stamped in the leaves.

The principle of the Alco arrangement is similar to that of the Winton. Instead of extending clear across the frame, however, the top plates each extend a trifle less than half-way across; forming, virtually, big, strong corner gusset plates with spring seats in the under sides of the projecting lugs. Holes of considerable size serve to remove quite a little metal where it is of



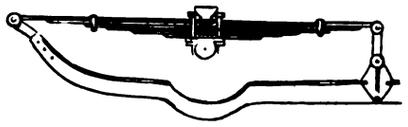
PANHARD SEVEN-EIGHTHS

no service, materially lightening the construction at this point.

The extended gusset-plate also is embraced in the rear construction of the Pierce-Arrow, and the springs are clipped under the lugs, too; but the plates which form the brackets are comparatively short, being merely gusset plates of ordinary size. As they are not depended upon very largely as strengthening members of the frame, the frame itself at the rear end is made strong and heavy enough to require no great auxiliary bracing.

Rear Frames That Do Double Duty.

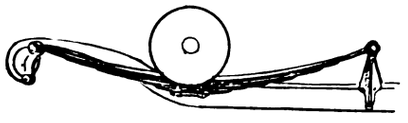
The Locomobile is typical of another class of three-quarter elliptic rear spring attachment. While the springs are clipped to brackets on the frames, the brackets are just plain spring brackets and nothing else; they are heavy, forged right-angle brackets riveted to the frames so as to form little shelves that are about flush with the frame tops. The springs are clipped to the tops of the brackets, and not to the under sides as in the style of construction already referred to. Except for the fact that the brackets are carried a little higher with relation to the frames to which they are at-



NORWALK UNDERSLUNG

tached, the same construction is employed in the Haynes car; the brackets are exceptionally heavy forgings, ribbed to afford ample stiffness.

A different method of carrying out the same general scheme is embodied in the Stearns-Knight; the illustration shows the arrangement much more clearly than it could be explained by words alone. The rear member of the frame is heavy, deep and of box section. Its laterally extended ends form the seats for the springs, which are bolted on top. The reason for the un-

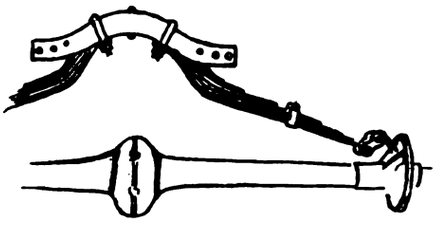


AMERICAN CONSTRUCTION

usual dimensions of this cross frame will be apparent when it is seen that in addition to acting as an important part of the car frame and supporting the springs, it carries the weight of the gasolene tank which, as the tank is of large capacity, is no small matter.

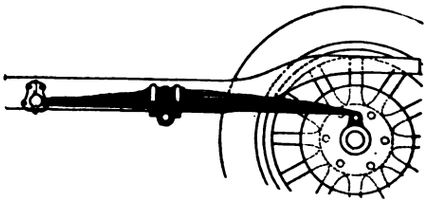
Lowering Bodies by Raising Springs.

There are very good reasons for the spring positions permitted by the arrangements typified in the six cars referred to. Granting the desirability of having the body of the car placed as low as possible without involving offsetting disadvantages, it is clear that the use of three-quarter elliptic springs placed under the frame would bring about an increase of body height that would be most unwelcome. Hence the positioning of the upper spring fastenings above the lower faces of the frames. In order to illustrate the importance of this factor, it may be said that it is possible to get the body lower by from two to five inches by placing the springs above or alongside the frames than below them. Furthermore, the wide spacing of the springs permitted by the offset position brings the weight close to the wheels, in which position it is best carried by the axle, and not only distributes the weight to the best advantage from a stress-resisting point of view, but affords maximum lateral stability of the body.



FORD REAR AXLE

A type of rear spring which is neither three-quarter elliptic nor full elliptic, but is just half-way between the two—that is to say, seven-eighths elliptic—is employed in the Panhard light cars, the heavier Panhards, incidentally, being fitted with three-quarter elliptics in the rear, because the makers consider them better adapted to heavy machines. Clearly this type of spring calls for special suspension and anchorage, which is provided by making the point of attachment to the axle the only rigid fastening; the front ends of both upper and lower spring members are shackled to the frame, the "kick-up" of which lends itself particularly well to the arrangement, while the upper member is pivoted to the frame at a point somewhat less than half its length from the front end. The rear ends of the spring members are shackled together in the usual way, the upper member being scrolled to bring it under the



KING CANTILEVER SPRING

lower member. It will be observed, in this connection, that it is the almost invariable practice where three-quarter elliptic springs are employed to scroll the rear end of the upper member so as to permit its being hung below the lower member and connected by a shackle, this arrangement apparently permitting greater freedom of action and a little lower hanging, as well as a greater effective length of active steel within a given over-all length.

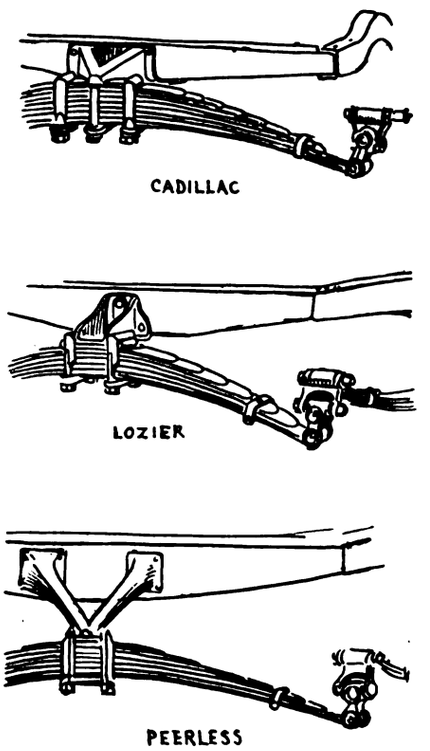
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In the platform type of rear spring suspension, which provides a three-point support for the rear of the frame, it is usual to pivot the front ends of the side springs, shackle their rear ends to the ends of the cross spring and rigidly attach the middle of the cross spring to a bracket projecting from the rear cross member of the frame; all the springs are semi-elliptics. There is but little opportunity for variation in platform spring suspensions and apart from minor details they are much alike. It may be noted that with the side springs in the usual position outside the main frames and the rear spring back of the rear frame—that is, with the entire spring system outside of the car framing—there is no difficulty in getting the body as low as the axle height will permit. The Peerless, Lozier and Cadillac cars are prominent among the machines employing this form of rear suspension, and the easy riding qualities of these machines leaves no question as to the efficiency of a well-designed platform system.

Rear Suspensions That Are "Different."

A form of spring suspension that is different from all others and is a law unto itself is that in which a single rear spring on each side is employed, with the rear end shackled to the rear axle, the front end pivoted to the car frame and the middle also pivoted to the frame, so that no part of the spring is fixed and every inch of it is free to yield all the elasticity it possesses. This system is best known as the Lanchester system, and is used in England by the car of that name as well as by the King in this country, and by the Edwards-Knight. Owing to the peculiar method of hanging the spring the forces acting upon it are applied in the reverse of the usual direction, and so the spring is reversed—that is to say, the short leaves are on top and the long main leaf on the bottom. These springs possess a peculiar action of their own that does much to mitigate the discomfort that so often is the result riding in the rear seat of a car, especially if the car is lightly loaded.

For small cars of light weight there has been evolved a spring suspension system that is as admirable for its simplicity and strength as for its really easy riding qualities—the single long cross spring with its ends shackled to the axle close to the wheels, where the weight best can be supported, and the middle rigidly bolted to the frame. The Ford and the Hupmobile present excellent examples of the single cross-spring system and are in agreement as to the general application of the principle, though they differ in their details. In the Ford the rear cross member of the frame has a deep upward curve in the middle, corresponding with an arch formed in the middle of the spring; the arch in the spring fits into the channel of the curved frame, where it is securely held by a pair of clips, while the ends are shackled to brackets formed in the axle casing very close indeed to the wheels. This wide spacing of the spring shackles and the consequent light loading of the middle of the axle is in no small degree responsible for the fact that a very light axle can be used without undue strain. In the case of the Hupmobile the spring is carried well back of the axle, a pair of rearwardly extending brackets serving as connecting points for the end shackles, the middle of the rear cross frame coming directly over the spring, to which



THREE TYPES OF PLATFORM SPRINGS

it is bolted. The frame of the car, of course, projects further to the rear than that of the Ford.

Hanging Springs in Underhung Cars.

In the underslung car, in which the frame hangs under the axles, while in some cases the springs also are below the axles and in other cases above, the springs are semi-elliptic or practically flat. In the American and the Regal cars the springs are slightly curved and, together with the frames, are below the axles. In the Norwalk the springs are normally flat and are above the axle. A further difference is that in the American and Regal the springs are shackled at both ends, while in the Norwalk only the front end is shackled, the rear end being pivoted to the upturned rear end of the frame. In all three there is a deep drop in the frame just under the rear axle, giving ample clearance for relative movement between frame and axle without bumping.

It goes without saying that the foregoing does not by any means cover all the variations in rear spring attaching methods, for their number is legion and the opportunities for detail differences are almost unlimitted. They are prominent and typical examples, however, and serve to convey an idea of current practice in this little thought-of but extremely important constructional detail.

Method of Aligning Piston-Pin Bushings.

Accuracy of alignment of the working parts of a gasolene motor is of such vital importance that manufacturers are at great pains to avoid errors, and not a few ingenious methods of testing have been devised. Among them is a simple and effective one that is employed in a foreign factory for determining the alignment of the piston-pin bushings in the upper ends of connecting rods. After the big ends have been finished and scraped to their crankpins, they ase bolted up in place on the crankshaft with the upper bushings in a straight line.

An accurately finished steel shaft, fitting the bushings without play, is run through the holes, passing through all four—that is, if the rods are in perfect alignment. Obviously, if there is any error the shaft will stick at the rod that is off, and the error can be searched out and corrected. This test will reveal a twist or other deformation of the rod, as well as lack of parallelism of the big and little end bores, and will also show up a rod that is too long or too short, by refusing to pass smoothly through.

Graphite to Assist Valve Grinding.

A practice that is said by some repairmen to be beneficial is that of putting a sort of final polish on valves, after grinding, with graphite. After the grinding has been completed and all the oil and grinding compound thoroughly washed off, the valve seat is sprinkled well with dry graphite and the valve is worked on its seat just as in grinding. The result is said to be that the surfaces resist wear longer and retain their tightness better than without the graphite finish.

Short Circuit from Graphite Brushes.

In electric motors or generators in which graphite brushes are employed particular care should be taken to keep the accumulation of brush-dust wiped away, for as graphite is a good conductor of electricity it is possible for a ground or a short-circuit to form with the aid of the dust and, perhaps, a little moist oil.

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RECENT DEVELOPMENTS in ACCESSORIES

Light-Dimming Device from Toledo.

Now that the law has stepped in and had its say with regard to the quantity and quality of the light projected by the lamps of automobiles, there has been no little activity among those who make lamps, as well as those who make specialties, with a view to providing ways and means for keeping the light within bounds when within the jurisdiction of the law. One concern that has given this matter serious thought is the Suburban Lighting & Gas Engine Co., of Toledo, Ohio, which just has brought out a dimmer, the general appearance of which is shown in the accompanying illustration. The relation of the dimmer to the lamps is precisely the same as the relation of the throttle to the motor, which is as much as to say that it controls the power of the lights. By turning the little lever of the "Dimit," as the device is called, the supply of current to the lamps is increased or decreased at will and the amount of light varied in proportion.

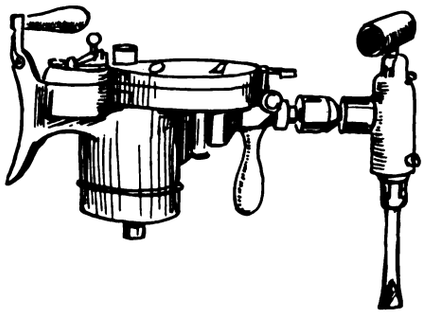
A feature of the "Dimit," which is not common to most rheostats, is that it does not waste the current that does not go to the lamps, but acts as a true throttle in preventing its discharge from the source of current. In the case of a storage battery system this is a matter of no small importance. The makers state that in a test the "Dimit," in cutting down the power of a set of lamps, cut the consumption from 8 amperes to 2 amperes, and still the lamps were sufficiently bright to comply with legal requirements.

The device acts as a check to currents of excessive voltage, and while applicable to all cars, is especially adapted for use on Ford cards, where the flywheel generator produces a current of high potential when the motor races and is liable to burn out lamps taking dynamo current. The device, which retails for $2.50, is installed by merely wiring it in series with the lamp or lamps to be controlled and will handle from three to five lamps at once.

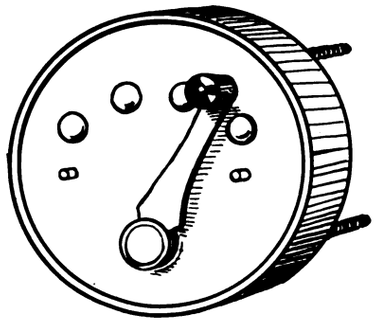
Plugs that Prevent Cylinder Cracking.

When water left in the jacket of a gasolene motor cylinder freezes, it expands with tremendous force, but the amount of expansion is very small. Therefore, any method that will provide a little extra room for expansion often will save the jacket from cracking or bursting.

The salvation of the jackets under these conditions is the purpose of the plugging system evolved by Welch Bros., of Pontiac, Mich., whose idea is to put into the jacket a plug that is more than strong enough to hold all ordinary pressures, but will give sufficiently to prevent disaster in case of freezing. The accompanying illustration tells the story. A hole drilled in the wall of the jacket is countersunk and a specially made, saucer-shaped disk of soft steel is expanded into the opening by driving with a hand punch until the edges of the disk are pressed hard against the edges of the countersink. The plug holds perfectly until abnormal pressure is brought to bear, when it is pushed out of place sufficiently to afford relief.

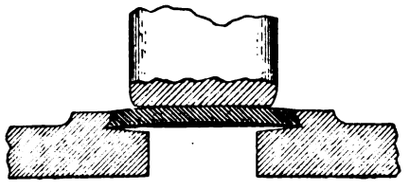


TEMCO ELECTRIC DRILL



"DIMIT" LIGHT REGULATOR





WELCH EXPANSION PLUG

In making regular use of these plugs the drilling process can be eliminated by coring the holes in the foundry and casting sheet metal grommets into them, thus forming seats for the plugs and obviating further work. The plugs and grommets are made in three sizes, ⅞ inch, 1 inch and 1⅛ inch, and are so cheap that the expense of using them can be practically ignored. Smaller sizes are also made for stopping sand holes, etc., and also brass and aluminum plugs for special work.

Tool that Renders Drilling Easier.

Electricity has come to the aid of the automobile repairman in many ways, and has been instrumental in relieving him of many of the jobs that are generally designated as "mean." Not the least among the despised tasks is the drilling of holes in out-of-the-way places, where holes must be drilled with a hand-operated tool, often at the cost of considerable time, temper and knuckle-bark. Among the more recently developed tools designed to simplify such work is the electric motor hand drill manufactured by the Temco Electric Motor Co., of Sugar street, Leipsic, Ohio, which, though of small size, as the accompanying illustration shows, and weighing but 11 pounds, has a powerful little motor and reduction gearing, all enclosed in a tight casing.

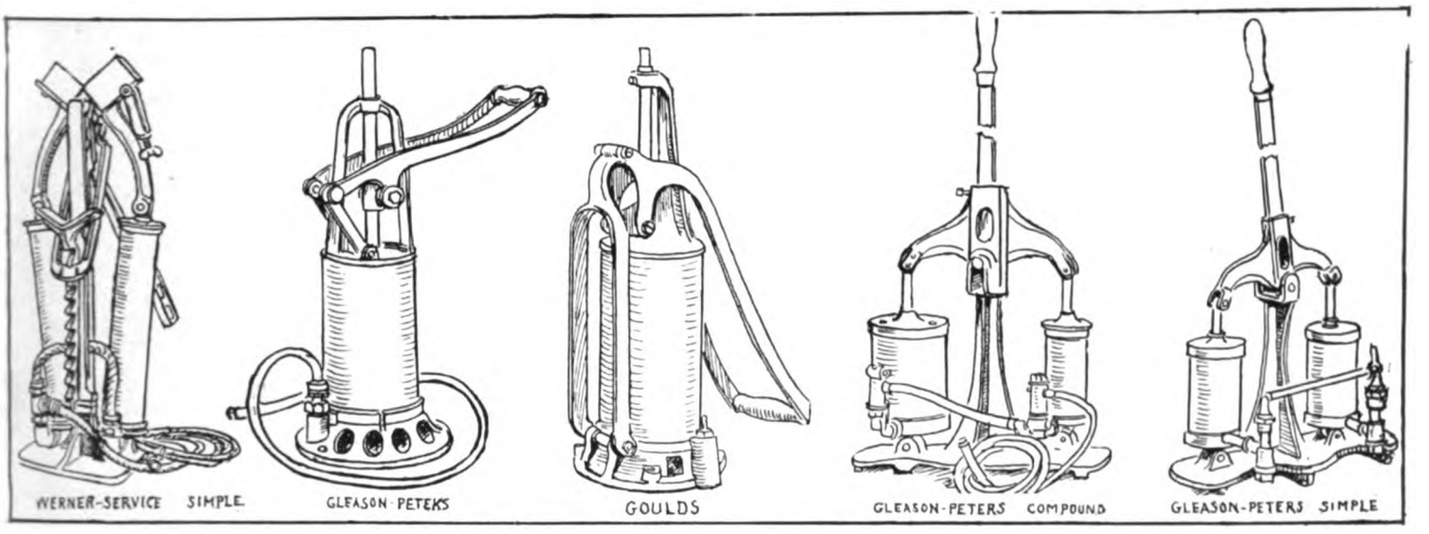
The little machine will drill holes in steel up to ⅜ inch diameter, will run a 3/16 tap into cast iron and, by means of a quick-attachable emery wheel, will grind tools anywhere in the shop or do any work that a small emery wheel can do, and do it in places that would be inaccessible to the ordinary grinder. Further, by using the valve-grinding attachment, which is inserted in the chuck, valves can be ground with practically no physical labor; the method of using the valve attachment is shown in the illustration. The valve is not rotated, but is oscillated ⅜ of a turn at a time, just as if the work was being done by hand, and so the danger of cutting grooves in the seat and valve is avoided. The weight of the tool is sufficient to maintain the requisite pressure to do the work properly. Current is taken from any lamp socket that may be handy, the usual flexible cable being employed as a conductor. The tool is made for either alternating or direct current.

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REDUCING THE BURDEN OF TIRE INFLATION

Hand-Operated Garage Inflators That Substitute Leverage for Muscle—Some Simple, Compound and Double-Acting Compressors and How They Operate—Requisites of the Ideal Pump for Hard and Continuous Service.

Yachting—or motor boating—and automobiling are akin in at least one respect. Both sports require periodic use of a pump, one of them being a bilge pump, of course, to clear the hull of the drink that seeps in through the seams, and the other being the time-honored tire pump. Ever since Dunlop gained elusive fame by the perfection of his pneumatic tire, an air pump has formed a very prominent part of every motorist's kit for, as was made plain in Motor World last week, air has a disconcerting proclivity to "ooze" through the minute interstices in rubber tubes, and it must be replaced. To replace it, as every one knows, requires either muscular effort or that mental effort which precedes the operation of a motor-driven pump with which a great many modern cars now are equipped.



FIVE DIFFERENT TYPES OF POWERFUL HAND-OPERATED TIRE INFLATORS

Bringing Work to the Garage Door.

The almost universal use of demountable rims and detachable wire wheels has obviated the necessity for much of the road work that is disguised by the term tire inflation, for punctures or blow-outs now mean merely the substitution of a rim or a wheel carrying a fully inflated tire. But the necessity for a pump still remains; its application has merely been transferred from some roadside to the garage at home, where most of the tire inflation is done anyway. And where no power driven pump is available, nothing remains but an application of good old "elbow grease."

All of which was appreciated by Billy Rea, who, as was told three weeks ago in Motor World, equipped his garage with a small compressor and thereby gained prestige and custom. He knew that every motorist must at some time or another inflate his tires; and by putting two and two together he figured that to attract motorists to his garage with the aid of "free air," was pretty good business; and it was, too. He had power, of course, and therefore he had no particular difficulty in "hooking up" a small compressor. If he had had no power—as indicated by a humming electric motor or a chugging gas engines—it is altogether likely that he would have put in one of the various portable outfits illustrated and described in Motor World last week, for his shop is electrically lighted. Having no electric light, it is probable that he would have purchased a really first-class hand-operated pump, and in seeking to select one he would have found very nearly as much variety as he found in power driven outfits.

It is altogether likely that a great many garage proprietors have overlooked the opportunities that demountable rims and detachable wire wheels have thrown in their path. They have made it possible for him to attract trade in a way that was not possible a year or so ago. They have brought work to his shop that heretofore was done on the road, and his opportunity for bettering himself consists in facilitating that work. Where it cannot be done with the aid of a power air compressor of some sort, there remains the large capacity hand-operated pump as a solution of the problem; without casting any reflection on those who really are industrious and who are not prone to shirk their work, chauffeurs as a rule are just a little bit lazy; they do not like to pump up big tires any more than do owners, and they will take to the garage that furnishes them "free air" as easily as a duck takes to water; which, briefly, constitutes the wide-awake garage owner's opportunity.

Shortcomings of Ordinary Pumps.

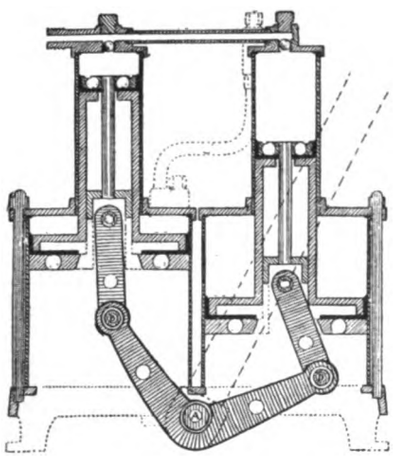
It is a lamentable fact, to which more than one person can bear witness, that the average garage pump furnished for the use of patrons is a sad failure; either it is no better than the small pump furnished as part of the car's equipment, or it is out of order, or both. Hence, reading by the lesson, substantial construction and large capacity are two of the prime requisites for a garage pump that is to be used by every one indiscriminately. The third requisite is easy action; the pump must perform its work quickly and with the minimum exer-

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tion on the part of the operator; as minor requisites, it should be operable by one person—another should not be needed to hold the pump or the air connection or anything else—and it should be so mounted that its operation is not painful. Pumps that are too near the floor cause backaches and are not calculated to induce good nature, regardless of their other excellent features.

Several Varieties of Pumps Made Plain.

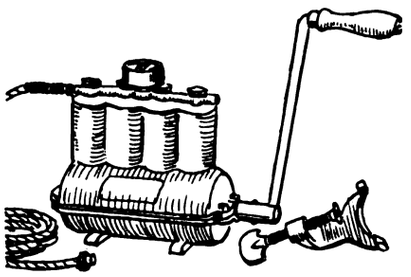
Broadly, garage pumps can be divided into two classes—namely, simple and compound; a further classification divides each of these types into single-acting and double-acting. In the simple pump, which, as its name implies, is the simplest of them all, air is forced into the tire only on the downward stroke of the piston, the whole pump consisting of nothing more than the piston



GLOBE COMPOUND DOUBLE-ACTING

and the cylinder. In the compound pump there are two cylinders—low and high pressure—and the air is transferred from the low pressure cylinder to the high pressure cylinder, and then to the tire. Single-acting pumps force air into the tire only on one stroke—either up or down, though it is usually down — whereas double-acting pumps operate on both strokes. These are the classifications that apply broadly to all air compressors, whether hand or power operated; incidentally, simple pumps are styled single-stage pumps and compound pumps are styled double- and sometimes triple- or quadruple-stage pumps, according to the number of cylinders the air passes through before it finally reaches the tire. For ordinary garage use, however, it is very seldom that either triple- or quadruple-stage pumps are used; there is no necessity for them, because they are used only for very high pressures.

The cheapest kind of pump to manufacture and to sell is the simple pump, of course, which accounts in a measure for its widespread use. It consists of nothing more complicated than a brass cylinder and a plunger; there are no valves and there is absolutely nothing to get out of order, barring only the cup leather washer on the piston, which will remain in perfect condition indefinitely if it is treated with a little oil once in a while. Among a whole lot of other manufacturers, the Cox Brass Mfg.

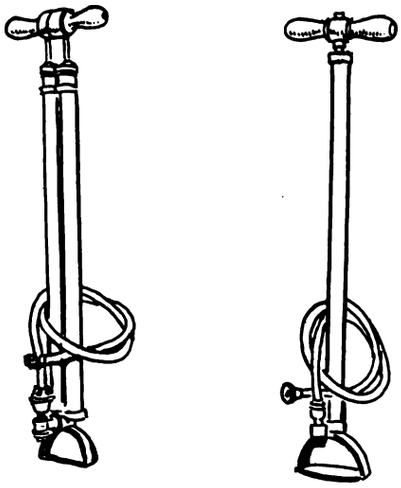


DIMINUTIVE PEERLESS PUMP

Co., of Albany, N. Y., makes pumps of this style, one of them being illustrated in the accompanying sketch.

Obtaining Leverage by Decreasing Bore.

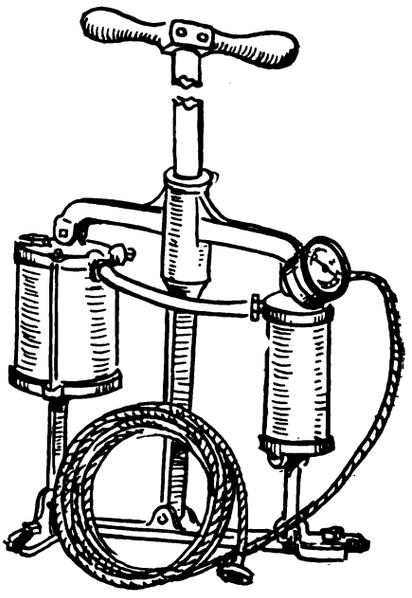
The leverage in the Cox pump, or in any other pump of the same kind, is long; which is to say, the work required to obtain pressure is spread out over a comparatively long period; in order to obtain ease of action, the pump barrel is made comparatively small—1¼ inches in the case of the Cox pump—and the travel of the piston is long. In this simple way the leverage is increased. If the capacity of the pump were



COX COMPOUND AND SIMPLE

increased by increasing the size of the barrel it would be well-nigh impossible by human exertion to force the piston to the bottom of the cylinder against pressure. The shape of pumps of the kind has one advantage: It makes them fairly easy to reach. It is not necessary to break one's back to operate them with the base resting on the floor.

To increase the capacity of a pump implies either increasing the diameter of the cylinder of the length of the stroke, or both, and as increasing the stroke is out of the question, nothing remains but to increase the diameter of the cylinder. Increasing capacity, of course, increases the power required to operate the pump and to obtain the power the simplest method is to increase the leverage. This is what has been done in both the Goulds pump, which is made by the Goulds Mfg. Co., of Seneca Falls, N. Y., and in the pump made by the Gleason-Peters Air Pump Co., of Brooklyn, N. Y. In material aspects the two pumps are not unlike each other, though the method of obtaining the necessary leverage is quite different, as is made plain by the



BINKS COMPOUND INFLATOR

pictures. In the Goulds pump, the cylinder and base are cast integral, whereas in the Gleason-Peters, the cylinder is formed of heavy seamless brass tubing and the base is a separatae casting of bronze; the cylinder of the latter measures 3¼ x 6¼, giving a displacement of 36 cubic inches of air per stroke, and the measurements of the Goulds are 3¼ x 5½, bore and stroke. The approximate weight of the Goulds is 16 pounds and of the Gleason-Peters 11 pounds; with either, pressures up to 150 pounds can be obtained quite easily.

Permitting Operators to Stand Upright.

For the man who prefers to stand upright when he inflates his tires, there are several styles of simple and compound pumps available, not the least interesting of which is the Werner-Service "Jackpump," as it is styled by its manufacturers, the Werner-Service Mfg. Co., of Jersey City, N. J.; in its simplest aspect, it is a clever combination of a twin-cylinder simple pump and a jack; hence, it is equally serviceable on the road and in the garage. Its two cylin-

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ders are both connected to the same outlet, thus making plain that the pump is not of the compound variety. The bore and stroke are 2 inches and 11 inches, respectively, and the capacity is 60 cubic inches or air per stroke, the obtainable pressure being 150 pounds to the square inch. In operation, the jack portion of the pump is placed beneath the hub cap of a wheel, and the weight of the vehicle serves to hold the pump securely during the inflation operation. The weight of the complete outfit is 14 pounds and its extreme height, exclusive of the lever, of course, is 20 inches.

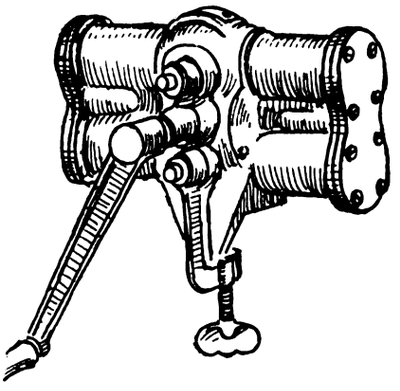
Simple and Compound Action Explained.

Among a number of other styles of pumps, the Gleason-Peters company also produces a two-cylinder simple compressor of rugged construction suitable for use in a public garage, where it is likely to be subjected to hard and continuous service; it is illustrated herewith and scarcely requires description. The cylinders measure 3½ x 5 inches and the obtainable pressure is 60 pounds. Substantially the same pump also is constructed to operate on the two-stage principle, in which case one of the cylinders—the low pressure one—measures 3½ inches in diameter and the other measures 2 inches. In this pump, which is illustrated herewith, the low pressure cylinder exhausts into the high pressure one and on the subsequent stroke the air in the smaller cylinder, already under considerable pressure, is forced into the tire. With this arrangement the obtainable pressure is 150 pounds. Compound pumps of the straight up-and-down type like the Cox pump shown by the accompanying picture, invariably have the smaller or high-pressure cylinder adjacent to the high pressure cylinder with the latter exhausting into the former on the up stroke of the plunger; the down stroke of the plunger then serves to force the air into the tire.

High Pressure Obtained on Both Strokes.

In the Binks compound pump, which is made by the Star Brass Works, of Chicago, Ill., and is illustrated herewith, the cylinders instead of their pistons are connected to the oscillating handle, though the principle of operation is exactly the same as that of the Gleason-Peters. The cylinders are made of seamless brass tubing and measure 4 x 5, for the low pressure and, and 2¼ x 5 for the high pressure. The plunger rods are made of steel and are equipped with chrome leather packings; as a means to prevent tires being over-inflated, a gauge is mounted integral with the low pressure cylinder. The weight of the pump complete is 20 pounds and the obtainable pressure is 200 pounds.

The Carver pump, which is produced by the Osborne & Stephenson Mfg. Co., of Plainville, Conn., and which is illustrated herewith in section, differs from any of the others in that it is of the compound double-acting type. Which is to say, air under high pressure is delivered to the tire on both strokes and not on only one, as is the case with the other pumps. Air is delivered from both sides of the low pressure cylinder to either side of the high pressure piston, and from both sides of the high pressure piston to the tire, giving the same

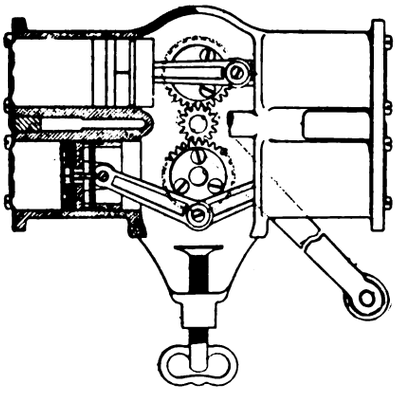


HAWTHORN FOUR-CYLINDER PUMP

result as if two regular compound pumps were clamped together. The pump is made of heavy, solid brass throughout and has been designed for continuous and hard service.

Two Types of Four-Cylinder Pumps.

Hand-operated pumps having more than two cylinders are few and far between probably the only two that are constructed being shown herewith. The first of them



HAWTHORN PUMP IN SECTION

is the Peerless, which is made by the Peerless Accessories Manufacturers of Chicago, Ill., and the other is the Hawthorne, which is produced by the Hawthorne Mfg. Co., of Bridgeport, Conn. Though both of these pumps are of the simple variety and both have four cylinders, they are widely different, as may be seen by the pictures.

In the Hawthorne pump, for instance, the cylinders are horizontal and are opposed, whereas in the Peerless they are vertical and the pistons are operated by a miniature crankshaft in much the same way that the pistons of a gas engine are connected. The operation of the Hawthorne is perhaps best made plain with the aid of the accompanying part sectional drawing, which shows the pistons and their method of connection to the hand crank. To the crank handle there is keyed a spur pinion which meshes with a pair of gear wheels to which the four pistons are connected; the gear ratio is 1 to 2. Air is admitted to the cylinder through automatic valves in the cylinder heads, the valves being mechanically actuated with piston rings. The two crank pins are arranged at right angles to each other, so that when one pair of pistons is at the end of the stroke the other pair is approximately at mid-stroke, thus giving a continuous stream of air. The obtainable pressure is 100 pounds, and as the pump may be clamped to any available shelf or bench it can be moved about a garage and operated in proximity to the work in hand. The weight of the complete pump is 15 pounds.

In the Peerless pump the cylinders are made of close-grain cast iron and for lightness—the whole pump weighs only nine pounds—the pistons are made of steel and are fitted with leather washers; the bore of the cylinders is 1⅜ inches and the stroke 1⅝ inches. The overall dimensions of the pump are 7½ x 9½ x 3, and as the handle is removable and the pump is attached with a clamp, it may be carried in the tool box of a car on occasion.

Double-Acting and Compound Combined.

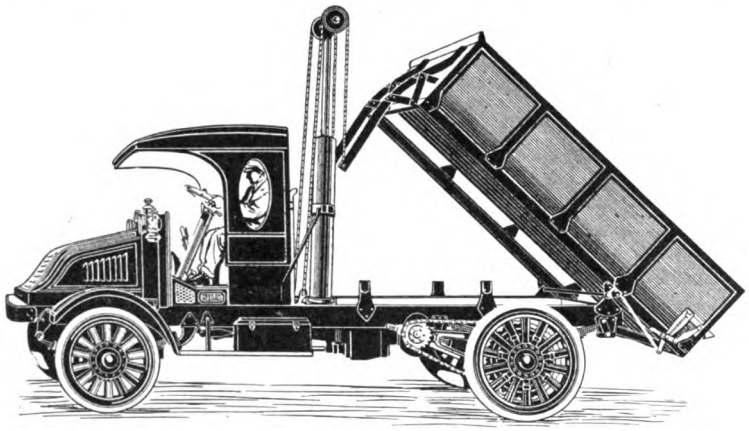
The Globe "Dead Easy" pump, which is manufactured by the Globe Mfg. Co., of Battle Creek, Mich., and which is shown herewith in section, is still different from any of the others; although it has four cylinders, two of them are high pressure and two of them are low pressure. The high pressure cylinders are placed above the low pressure ones, as is shown in the picture, and the pistons for each pair of cylinders are made integral. In operation, as the lever is moved one way, air is compressed in one of the low pressure cylinders and then transferred into the tire; the same operations take place as the lever is moved the other way, the result being that air under high pressure is forced into the tire on both strokes of the lever. Incidentally, it is pointed out, as the pistons are operated by a link and rocker mechanism their travel at the ends of their strokes, when they are performing little or no work, is rapid; as the air is placed under pressure the leverage increases, thus decreasing the amount of effort needed to obtain the desired pressure.

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HYDRAULIC DUMPING GEAR ON THREE TON KELLY TRUCK

Ingenious and Powerful Tilting Device Driven by Engine and Controlled by One Man—Its Construction and Operation.

While it no doubt will be a good many years before the last hand-dumping mechanism, with its rough, power consuming gears, its slow operation and its back-breaking propensities, has been cast into outer darkness and the scrap heap, it will not be the fault of the motor truck people, who are striving manfully to perfect power dumping mechanism and, be it said, are meeting with no small measure of success. A notable example is the Kelly-Springfield Motor Truck Co., of Springfield, Ohio, which concern has placed on the market one of the latest power dumping devices, a hydraulic apparatus that is shown in the accompanying illustration.



WOODS' HYDRAULIC DUMPING GEAR ON KELLY TRUCK

The hoist itself is manufactured by the Wood Hydraulic Hoist Co., of St. Paul. Minn., and is of the hydraulic type. The method of attaching the hoist to the truck, the operating and controlling apparatus and the power transmission gearing all were designed and produced in the truck factory. The central feature of the hoist is the power cylinder in which the pressure transmitting medium is oil, as usual in hydraulic machinery. The cylinder is 6 inches in diameter and its piston is fitted with two rings; from the piston rises the piston rod, 2 inches in diameter, carrying a yoke, on opposite ends of which are two large steel pullies over which run two steel cables. The cables are secured to steel brackets at the front end of the body, while forward of the cylinder they are connected to an equalizing device which eliminates the possibility of one cable bearing more than its fair share of the weight of the load.

The oil pressure pump is of the gear type and is driven at three times engine speed, so that it is unnecessary to speed up the motor when hoisting a load. In fact, a motor speed of 300 revolutions per minute is said to be sufficient to lift a three-ton load and return the body to rest on the frame in about one minute. The pump is driven by chain and sprocket gearing from an extension of the countershaft of the change-speed gear.

The oil pump is engaged by first throwing out the clutch, which brings the countershaft to a standstill, engaging the special pump driving gears by means of a lever on the right of the seat, and then letting the clutch in. The hoist does not begin to work, however, until the driver starts it by means of a special lever on the right side of the truck; this lever controls the hydraulic apparatus directly, independent of the motor driving system. There is no danger in leaving the seat while the hoist drive is in gear, for the drive is locked in the same way, and by spring plungers of the same type as those used in locking the gear-shifting bars—in fact, the locks are identical and interchangeable. The hoist-operating lever is pushed forward to lift, pulled backward to reverse and allow the body to drop, and when vertical is in neutral position, despite the fact that the motor may be running steadily all the time. When the driver again mounts his seat, throws out his clutch and unmeshes the pump driving gears, the truck is ready to be driven and not a single part of the hoisting mechanism will be in motion until it again is required for its designed work.

The new hoist has the advantage that it is easily and conveniently operated by one man, so that an extra hand does not have to be carried for the purpose. Should there be another man on the ground, however, he can operate the hoist control, if so desired, allowing the driver to remain in his seat.

The truck itself is of the standard Kelly-Springfield model, of three tons' capacity, with the motor under a hood of the Renault type and the radiator against the front of the dashboard. Incidentally, it will be noticed that the driver is better protected than in the average truck, there being a neat little cab with an extension roof to keep off the worst of the weather. The enclosure is readily completed by curtains and windshield at the sides and front.

Two Ways of Making Adjustments.

One of the most soul-harrowing things that has to be done on a car is to turn a small nut or cap-screw in an awkward place with a wrench that does not suit the job. It is true that on most modern cars there are far fewer of these abominations than there were a few years back, but they still exist. One experience should be quite sufficient to inculcate the idea that a special wrench exactly suiting the work should be obtained at once and kept handy. There are so many sorts, shapes and sizes of wrenches now stocked by dealers that it always is possible to find one that will do. A good many valve-lifter adjusters are of the double-nut variety, and while such a device really calls for two small, solid wrenches, many a man has worn the skin off his knuckles and ruined his disposition by trying to adjust it with a big monkey wrench and a pair of pliers.

Special Tools for Special Work.

While there doubtless are some cars in which the tool equipment regularly supplied is ample to care for every phase of the routine adjusting work, there are a great many more where there are parts that either are very difficult to get at with ordinary tools, or else are simply out of reach without some special appliance, which may be, and usually is, something of a simple and inexpensive character. There would seem to be a chance for some wide-awake dealer to add somewhat to his reputation and to his collection of modern coinage by making it a point to seek out these spots in his own and other makes of cars and supplying the tools needed. There should be a ready sale for such things, especially if the dealer should take the trouble to make known what he was about—that is, advertise.

Spring Clips that Should be Tight.

Inasmuch as it is a pretty well established fact that most of the spring breakage that occurs is due to loose spring clips, it is a pretty good idea to examine these parts especially after touring and to tighten them if necessary.

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SALESMAN'S MOOD THE MEASURE OF HIS SUCCESS

Accidents Are Not Accidents and Neither Are Sales; Both the Result of the Working of Immutable Laws—Advice for Salesmen, Straight from the Shoulder—Instances That Illustrate Principles.

Salesmanship is just as scientific as any other profession and, accordingly, should be given the same careful study that one naturally would give to the study of medicine, or law, or civil engineering, or the hundreds of other professions that require systematic training.

Success in any line of effort comes through the operation of law. It doesn't very often come by chance or accident; at least, nobody gets very far by waiting for that chance to come of its own accord.

In the working out of Nature's laws, there is no such thing as an accident. A piece of rock tumbles from the side of a mountain and lands in the way of a limited train. We are inclined to call this an accident, but it simply is the result of Nature's forces having acted on that rock for a few hundred years or so, says the Studebaker News.

Adage That Fits the Salesman's Case.

Just as it is true of Nature, so is it true of business, or salesmanship, of the professions, of your personal success and mine.

Considering the fact that the success of most of us is measured by our ability to sell things, wouldn't it be a mighty good plan to make a study of the fundamental laws that govern our chosen work?

Across the facade of a New England court house is carved this phrase: "Obedience to Law is Liberty." That's a mighty good adage to carve on the front of a court house, and I don't think it would work much harm to the salesman who pasted it in the front of his hat.

Let us consider for a moment the first and really great law of successful salesmanship—in fact, one of the great laws of success in anything. It is this: Your degree of success is dependent upon your prevailing mood or frame of mind.

The pushing of any kind of business always commences in one's mind. The vision foreshadows the achievement. Every successful man to-day is living ahead of his business and what he is accomplishing now was planned, thought over, and lived in for months and possibly years in advance.

When you stop planning improvements in your work, your business will begin to decline, you will continue to use your shop-worn line of selling talk while the live salesman next door is racking his brains or a new and better argument.

Many a salesman is climbing to success over the backs of his competitors, and they, taking his dust as he passes, are blinded to opportunity and generally blame the house, or the product, or any old thing but themselves.

The live man to-day refuses to use second-hand ideas. The man of initiative is the one who forgets the drag of the past and starts something.

Just What the "Big Man" Can Do.

Another state of mind that has wrecked more salesmen than the armies of the world have killed men is fear of the customer; fear of their ability to sell; fear that their cars are not equal to a competitor's; fear that the Big Man will kick them out of his office.

Then you are a mere order taker.

If you have a feeling of self-deprecation when you are calling upon a prospect, it's a mighty safe bet that the prospect won't regard you or your car very highly unless the firm's advertising has been there first and made the sale before you arrived.

But why should you fear your prospective customer?

In all probability he will not hurt you—very much!

Yours is a plain business proposition: You are trying to sell him a car that will supply his needs. By making the sale you will help him while helping yourself. He can only buy—or refuse to buy. It's very doubtful if he ever did any serious bodily injury to a salesman who presented a business proposition to him in a business-like way.

Putting Confidence to the Proof.

If you have confidence in your house and in the car that you are selling, and believe that it is justly worth the price you are asking for it, your prospect is bound to feel the same sort of confidence.

Once upon a time a prospective buyer entered the office of one of our branches and asked to be shown a Studebaker "20" touring car. He was welcomed by the manager, who quietly explained the merits of that model.

The man listened to the sales talk and asked many questions. Finally he said: "I came in to see this car out of curiosity. I'll have to confess that I had about made up my mind to buy a Blank car. Your talk has not changed my decision entirely, and I'd like to see the other car before I buy."

Of course, this manager, following the old methods, should have camped right on the job of telling this prospect how the Studebaker was superior to the Blank.

He didn't do anything of the kind.

His prospect had expressed a desire to see the rival car before making a final decision—a right and privilege that should not be denied him.

"If you will step into my car," said the manager, "I'll have you taken to the Blank offices. The Blank car is a good one and deserves your study. If, after comparing it point for point with our car, you decide that ours is the better, we shall be very happy to serve you."

This manager not only had the prospect carried to the rival showrooms, but instructed one of his salesmen to accompany him and introduce him to the manager.

What Brought the Prospect Back.

The salesman introduced the man to the manager and told the latter that his visitor was in the market for a car and wished to have the Blank demonstrated. Then he withdrew. Later, the prospect bought a Studebaker.

"Your willingness to have me see the Blank car; your own admission that it was a good car to buy; your offer to take me to the rival showrooms and introduce me to the manager, astonished me," said the buyer. "But I knew that you could not do as you did unless you had absolute confidence in your own car. You evidently had no fear of competition. Your own belief made me believe."

Right here, brother salesman, you have the bed-rock upon which the whole science of salesmanship is built—Conviction based on Confidence!

This is a true story and it is a mighty sure proof that if you are confident, determined, pushing, hopeful and, above all, your business is based on the right state of mind, your customers will feel that spirit and your success will grow accordingly.

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1,044,007. Automobile Muffler. Charles G. Boeck, Jackson, Mich., assignor to Novelty Mfg. Co., Jackson, Mich., a corporation of Michigan. Filed July 1, 1911, Serial No. 636,522. Renewed April 6, 1912. Serial No. 689,042. (Concentric tubular shell muffler.) 7 claims.

1,044,019. Spring Wheel. George O. Clark, Ola, S. D. Filed March 19, 1911. Serial No. 613,598. (Spring wheel with radial helical springs.) 1 claim.

1,044,038. Spring Suspension. Henry Ford, Detroit, Mich. Original application filed July 31, 1909, Serial No. 508,779. Divided and this application filed Oct. 13, 1911. Serial No. 654,435. (Rear spring suspension for Ford car.) 8 claims.

1,044,118. Starting Device for Internal Combustion Engines. Harold B. Anderson, Lakewood, Ohio. Filed May 1, 1912. Serial No. 694,390. (Operating valve for priming starter.) 2 claims.

1,044,129. Driving Mechanism. Elmer D. Brothers, Chicago, Ill. Filed Feb. 16, 1911. Serial No. 608,914. (Worm drive with ratchet mechanism.) 17 claims.

1,044,198. Internal Combustion Engine. Alphonse Joseph Lavoie, Outremont, Quebec, Canada. Filed Aug. 21, 1911. Serial No. 645,247. (Valve operating mechanism for V-motors.) 5 claims.

1,044,277. Spring Hub. David Smail, Kansas City, Mo. Filed May 9, 1911. Serial No. 625,969. (Hub cushioned by helical springs.) 1 claim.

1,044,289. Brake for Automobiles. John D. Taylor, Edgewood Park, Pa. Filed April 25, 1910. Serial No. 557,572. (Valve arrangement facilitating use of engine as brake.) 8 claims.

1,044,314. Carburetter. Frank C. Watson, Des Moines, Iowa. Filed Feb. 5, 1912. Serial No. 675,667. (Automatic and interlocked control of both air and gasolene feeds.) 6 claims.

1,043,315. Safety Starting Means for Explosive Engines. William B. Webster, Philadelphia, Pa. Filed Jan. 10, 1911. Serial No. 601,849. (Anti-kick starting crank.) 3 claims.

1,044,324. Adjustable Elastic Automobile Wheel. Paul Wilkes, Cleveland, Ohio, assignor of one-third to Huber R. Brady and one-third to John A. Hoover, Cleveland, Ohio. Filed March 20, 1909. Serial No. 484,823. (Resilient wheel with hollow telescoping spokes containing springs.) 10 claims.

1,044,328. Detachable Rim for Vehicles. Marc Wolff, Chelsea, England, assignor to Messrs. Michelin & Cie. Clermont-Terrand, France, a corporation of France. Filed April 3, 1912. Serial No. 688,218. (Detachable rim with expanding rod fastening.) 4 claims.

1,044,339. Shock Absorber. William N. Border, Dunlap, Mo. Filed June 25, 1912. Serial No. 705,752. (Shock absorber of the auxiliary helical spring type.) 1 claim.

1,044,352. Vehicle Tire. Walter C. Cleghorn, Bloomington, Ill. Filed July 8, 1911. Serial No. 637,584. (Helical springs between inner and outer rims.) 1 claim.

1,044,366. Gas Engine Starter. Peter English, San Francisco, Cal., assignor, by mesne assignments, to The English Company, a corporation of Michigan. Filed March 28, 1912. Serial No. 686,850. (Fluid-pressure motor starter and driving gear.) 6 claims.

1,044,387. Steering Wheel for Automobiles and Other Motor Vehicles. Fred I. Hodge, Middletown, Conn. Filed Dec. 30, 1911. Serial No. 668,787. (Steering wheel with spiral wire-wound rim.) 5 claims.

1,044,397. Engine Muffler. Charles J. Knopp, Chicago, Ill. Filed March 29, 1912. Serial No. 687,162. (Arrangement of baffle plates and concentric cylinders.) 2 claims.

1,044,399. Ignition System. States Lee Lebby, James Island, S. C. Filed Feb. 27, 1911. Serial No. 611,508. (Ignition and lighting system with ignition and charging switches interlocked.) 8 claims.

1,044,409. Power Installation. William Morrison, Chicago, Ill. Filed Feb. 3, 1908. Serial No. 414,025. (Electric transmission for gasolene car.) 4 claims.

1,045,111. Speed-Indicating Instrument. Rollin Abell, Boston, Mass. Filed June 12, 1911. Serial No. 632,559. (Centrifugal speedometer with sliding weight mechanism.) 5 claims.

1,045,136. Shock-Absorber. Ernst Flentje, Cambridge, Mass. Filed Oct. 12, 1911. Serial No. 654,230. (Hydraulic shock absorber.) 1 claim.

1,045,213. Transmission-Gearing. Erick J. Swedlund, Williston, N. D. Filed June 23, 1911. Serial No. 635,008. (Planetary gearing enclosed in flywheel.) 6 claims.

1,045,214. Sectional Tire. Benjamin C. Swinehart, Youngstown, Ohio. Filed April 20, 1912. Serial No. 692,082. (Block tire with detachable sections.) 1 claim.

1,045,215. Gearing. Emery Teeter, Hamilton, Ontario, Canada. Filed June 29, 1911. Serial No. 636,086. (Friction transmission with automatic speed change.) 4 claims.

1,045,251. Carburetter. Theodore F. Bourne, Montclair, N. J. Filed June 19, 1912. Serial No. 704,522. (Gasolene feed regulated by pendulum device.) 15 claims.

1,045,267. Automobile-Radiator. Charles W. Dippert, Detroit, Mich. Filed Nov. 6, 1911. Serial No. 658,654. (Radiator of tubes and corrugated plates.) 8 claims.

1,045,272. Means for Attaching Air-Pumps to Automobiles. Edwin W. Fishburn, Denver, Col. Filed Aug. 22, 1911. Serial No. 645,455. (Means for driving air pump from rear wheel.) 4 claims.

1,045,330. Valve. Maximilian Charles Schweinert, West Hoboken, N. J., and Henry P. Kraft, New York, N. Y. Filed Feb. 10, 1909. Serial No. 477,129. (Tire valve with interior closure in addition to usual valve and seat.) 4 claims.

1,045,344. Starting Mechanism for Explosive-Engines. Lewis C. Van Riper and Abraham Novick, New York, N. Y.; said Novick assignor to said Van Riper. Filed Nov. 30, 1910. Serial No. 594,834. (Anti-kick crank with friction clutch device.) 12 claims.

1,045,363. Spring-Wheel. Charles H. Bicalky, Buffalo, N. Y. Filed Feb. 26, 1909. Serial No. 480,212. (Wheel with re-enforced spring spokes.) 4 claims.

1,045,404. Air-Valve. Alban Hottenroth, Berlin, Germany, assignor to General Electric Company, a corporation of New York. Filed Dec. 23, 1904. Serial No. 238,069. (Tire valve having elastic tubes one within the other, the inner tube closing by collapsing against one side of outer tube.) 14 claims.

1,045,422. Starting Device for Explosive-Engines. William L. McKissick, Carlisle, Iowa. Filed Nov. 13, 1911. Serial No. 660,004. (Spring starter.) 14 claims.

1,045,485. Cushion-Tread for Vehicles. Henry P. P. West, San Francisco, Cal. Filed March 28, 1912. Serial No. 686,768. (Hydro-pneumatic tire cushions.) 2 claims.

1,045,495. Tire-Inflating Pump. Henry K. Austin, Reading, Mass. Filed July 13, 1911. Serial No. 638,275. (Valve arrangement for hand pump.) 2 claims.

1,045,496. Automobile Control. Isaac F. Baker, East Orange, N. J., assignor, by mesne assignments, to General Electric Co., a Corporation of New York. Filed June 7, 1909. Serial No. 500,684. (Control system for electric vehicles.) 5 claims.

1,045,505. Two-Stroke-Cycle Internal-Combustion Engine. Gustav August Brauer, Chemnitz, Germany. Filed April 8, 1912. Serial No. 689,333. (Two-cycle revolving cylinder motor.) 2 claims.

1,045,516. Spring-Wheel. Ernest L. Coble, Electra, Tex. Filed Nov. 22, 1911. Serial No. 661,702. (Spring-supported tire.) 5 claims.

1,045,527. Clutch-Actuating Mechanism. Paul Daimler, Cannstatt, Germany, assignor to Daimler Motorengesellschaft, Stuttgart, Germany, a afirm. Filed June 10, 1912. Serial No. 702,804. (Double cone clutch and actuating mechanism.) 4 claims.

1,045,533. Skid-Preventing Means for Vehicle-Tires. George F. Eckart, Chicago, Ill. Filed Oct. 23, 1911. Serial No. 656,304. (Non-skid with cross-members and linked side rings.) 1 claim.

1,045,543. Elastic Tire for Wheels. Charles H. Genth, Philadelphia, Pa. Filed Oct. 18, 1909. Serial No. 523,232. (Pneumatic tire with double air chamber.) 2 claims.

1,045,544. Wheel Tire. Charles H. Genth, Philadelphia, Pa. Filed Sept. 23, 1911. Serial No. 650,906. (Pneumatic tire with double air chamber.) 3 claims.

1,045,560. Internal-Combustion Engine. John Kelly, Chicago, Ill. Filed Jan. 18, 1912. Serial No. 671,808. (Valves operated by hollow shaft extending into piston from cylinder head.) 6 claims.

1,045,559. Spring-Wheel. Charles Hector Johnstone, Armstrong, British Columbia, Canada. Filed Aug. 23, 1911. Serial No. 645,500. (Wheel with rubber-cushioned hub.) 1 claim.

1,045,576. Vehicle Driving Mechanism. William Luxmore, Chicago, Ill. Filed Jan. 14, 1910. Serial No. 538,051. (Transmission an ddifferential gearing.) 17 claims.

1,0045,579. Tilting Autotruck, Heinrich Mayer, Arbon, Switzerland. Filed March 21, 1912. Serial No. 685,298. (Rear-dumping truck body.) 5 claims.

1,045,613. Carburetter. Harris C. Roth, Chicago, Ill. Filed July 29, 19111. Serial No. 641,310. (Carburetter with automatic inlets formed of pairs of hinged plates.) 3 claims.

1,045,647. Speed-Indicator. Hubbe R. Wallace, East Auburn, Cal. Filed Nov. 15, 1911. Serial No. 660,323. (Speed indicator with centrifugally controlled indicating magnets.) 3 claims.

1,045,661. Spring-Wheel. James Baird, Detroit, Mich. Filed Aug. 17, 1911. Serial No. 644,553. (Tire formed of continuous wire coil tubing.) 2 claims.

1,045,688. Clutch. Fredereick S. Ellett, Elmira, N. Y. Filed Feb. 16, 1911. Serial No. 609,016. (Friction clutch and operating means.) 12 claims.

1,045,706. Electric Horn. Martin E. Hepburn, Elgin, Ill. Filed Oct. 26, 1911. Serial No. 656,915. (Electric vibrator horn.) 3 claims.

1,045,752. Motor Vehicle Driving Gear. John A. Scharf, Richwood, Ohio. Filed Nov. 2, 1911, Serial No. 658,141. Renewed Oct. 21, 1912. Serial No. 727,060. (Friction transmission system.) 2 claims.

1,045,760. Tire-Inflater. William A. Vinson, Healdsburg, Col. Filed Dec. 5, 1907. Serial No. 405,202. (Power-driven air pump mountetd on car.) 7 claims.

1,045,771. Automobile Sled. Ralph Carroll, Simmonsville, R. I. Filed Jan. 21, 1911. Serial No. 603,889. (Motor sled with traction chain drive.) 2 claims.

1,045,772. Lubricator. Howard E. Coffin, Detroit, Mich., assignor, by mesne assignments, to Charles E. Wiffler, Detroit, Mich. Filed April 13, 1908. Serial No. 426,753. (Oiling system with flywheel dipping in oil pocket.) 4 claims.

1,045,789. Shock-Absorber. Julius F. Herrmann, Indianapolis, Ind. Filed Jan. 2, 1912. Serial No. 669,050. (Double-armed friction shock absorber.) 4 claims.

1,044,479. Starting Device for Explosive-Engines. William E. Blair, Buffalo, N. Y., assignor to Buffalo Gasolene Motor Co., Buffalo, N. Y., a corporation of New York. Filed May 18, 1912. Serial No. 698,212. (Fluid-distributing valve for motor starter.) 4 claims.

1,044,512. Cushion-Tire. Harrison A. Fry and Guy J. Bruce, Spring Lake, Wis. Filed Feb. 24, 1910. Serial No. 545,667. (Wheel with solid tires and pneumatic cushions.) 1 claim.

1,044,524. Spring-Hub for Vehicle-Wheels. Geo. Henry Herrick, Fort Madison, Iowa. Filed Oct. 23, 1911. Serial No. 656,134. (Wheel with spring-cushioned hub.) 2 claims.

1,044,546. Starting Device for Explosive-Engines. Charles M. Lee, Buffalo, N. Y., assignor of one-third to Daniel E. Manus, Buffalo, N. Y. Filed Dec. 26, 1911. Serial No. 667,801. (Anti-kick crank.) 12 claims.

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National

Announcement of

another series of National Cars—

SERIES V-3

ONLY one car is better than a *National* and that is a *better National.* The best thing we can say of this New Series V-3 is that these cars are the best the National company has ever built. Improved Series V succeeded the Series V., and now comes the perfected Series V-3.

Every new series of *National* cars inherits the "championship quality", and the accumulated result of years and years of development and success has produced the greatest "breed" of cars on earth.

They represent the ideal in motor cars, for comfort, power, efficiency, ease of operation, capability in every emergency, noiselessness and convenience.

They are the natural result of more than thirteen years of constant, all-the-year-round manufacturing experience. We do not make changes for the mere sake of changing; we do not "upset" everything by forcing yearly models.

The only standard we try to surpass—*the only standard for us to surpass*—is the *National's* former standard.

The *National* leads the world in demonstration of actual value. The *National* made and still holds the world's record for the fastest 500 miles in the International Sweepstakes races. There are so many such demonstrations of *National* superiority that the *National's* leadership has long been taken as a matter of course.

This New Series V-3 is guaranteed by the National company. No better reputation could possibly be given any car.

Beautiful cars in appearance, embodying the most artistic lines and the most luxurious finish—and mechanically so perfect that riding in one gives you that unconscious confidence and worryless ease which is the acme of touring or travel. They have everything the most exacting owner could desire.

Let us send you complete information on this New Series V-3.

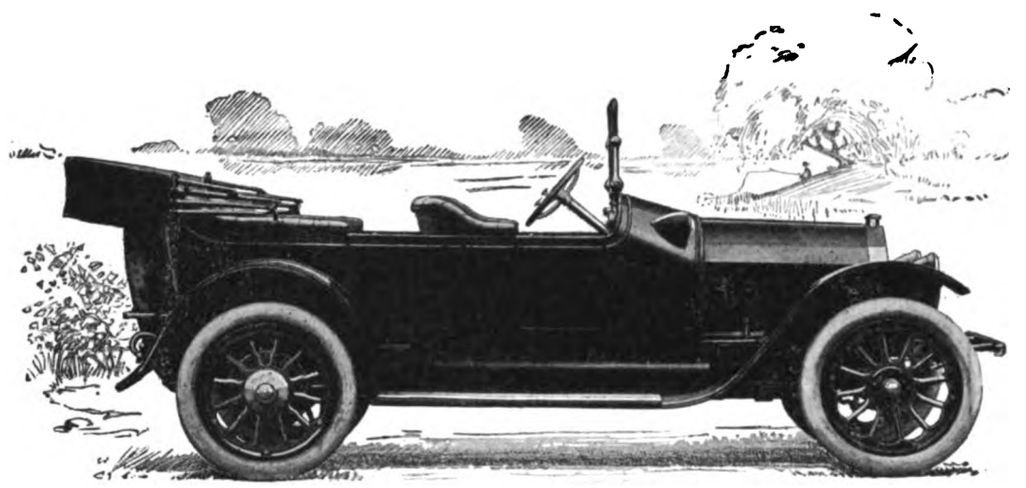
Once a National Owner Always a National Owner

Five Models—$2750 to $3400. Immediate Delivery

National Motor Vehicle Company

Dept. 90 Indianapolis, Indiana

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PATHFINDER TOURING CAR

40 horse power *120 inch wheelbase*

1914 New Pathfinder Models ready for delivery NOW 1914

¶ The phenominal sales record made by the Pathfinder "40" during the first five months in 1913 makes it possible for us to offer you 1914 models RIGHT NOW.

¶ This is not an announcement of new models for early delivery but means that we can actually *deliver* your cars *upon receipt of your order.*

¶ Pathfinder sales show an increase of 117% this season over a corresponding period of last year, because Pathfinder cars have gained a reputation for reliability that has been spread broadcast by present Pathfinder owners.

DEALERS:—Realize This Advantage

¶ You know how hard it is to sell old models against the new.

¶ You know how much competition will be eliminated by actual ability to deliver 1914 models at once.

¶ This is the exact position we are in today, due to the sales momentum created by Pathfinder cars already in use.

¶ This opportunity may come but once in a lifetime. Tell us what territory you can cover. We want you with us--act quickly as every minute counts.



THE MOTOR CAR MFG. CO.

1138 Division Street, INDIANAPOLIS, U. S. A.

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to Automobile Manufacturers Who Have Contracted for



Storage Batteries

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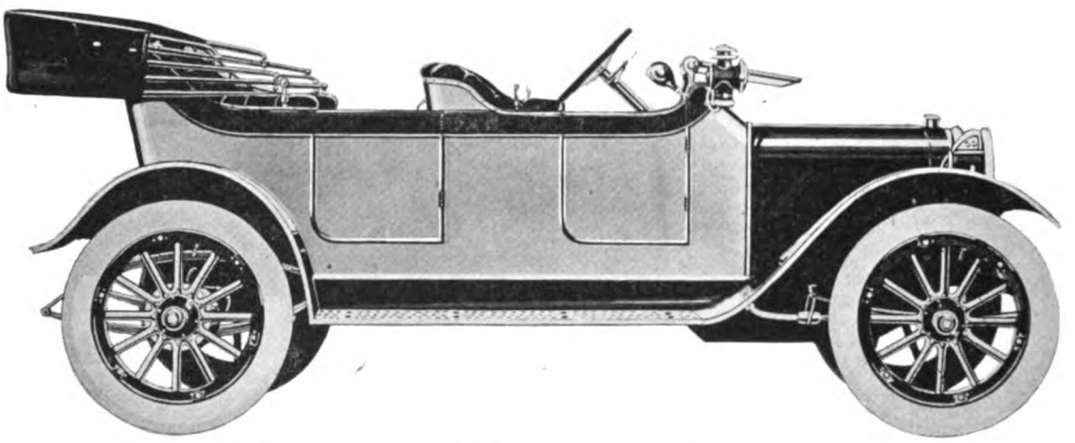
WILLARD STORAGE BATTERY CO., Cleveland, Ohio

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RCH Complete $900

F. o. b. Detroit



Motor, Gears, Axles It Is the Best

IN all three "Big Units" the R-C-H is the best popular priced car built. It is the most wisely priced, the most sturdily built and the most thoroughly satisfactory car any dealer anywhere can handle.

The motor is long stroke, big, strong and powerful. It operates at less than one cent a mile for gasoline.

The transmission gears are chrome nickel. They are made extra large and rugged—then heat treated.

The rear axle is of the most practical design. It gives the maximum power with the minimum waste. There is no rumbling; no balking in its co-operation with the other "Big Units."

R-C-H *sturdiness* and *economy* combine to make it a big seller. It is the ideal service car for the greatest number of people. If the car you are handling is above the average man's price wire us for agency details.

R-C-H Reasons:

Left Hand Drive--Center Control--Long Stroke Motor--Big Roomy English Bodies--Stewart Speedometer--Color Option, Russian Green or R-C-H Red--Full Set Big Electric Lamps or Prest-O-Lite System--Bosch Magneto--Jiffy Curtains--110-Inch Wheelbase.

R-C-H Corporation

704 Lycaste Street Detroit, Michigan, U. S. A.

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Detroiter

1914 Will Be a Crucial Period

No use talking—next year is going to test the mettle of the men who sell automobiles. The day has passed when "anything on four wheels" could be passed off on the public. People KNOW. Glittering phrases no longer suffice to move cars.

You've Got to Be There With the Goods

Will you be? Are you handling a car that is sound all the way through? That has the features of construction the public has learned are best—the full floating axle, the platform spring, and all the other seven that will make more sales in 1914 than ever before? A car, above all, like the Detroiter, with a low price that just sets everybody on edge to own the beauty?

The Detroiter's Nine Big Features:

1. Long stroke motor.
2. Platform rear spring.
3. Multiple disc clutch.
4. Full floating rear axle.
5. Extra capacity radiator.
6. Enclosed valves, all on one side.
7. Left side drive, Center control.
8. Extraordinary braking surface.
9. Ball bearings throughout.

If you are not there with such a car—get in touch with us before some other lucky man closes the territory.



BRIGGS-DETROITER COMPANY

449 Holbrook Avenue **Detroit, U. S. A.**

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Endurance is the Supreme Test

Five times around the earth and still good—two hundred fifty million, five hundred forty thousand revolutions under load do not wear out

NEW DEPARTURE BALL BEARINGS



During the life of these bearings, five sets of bearings of another type were worn out and replaced. New Departure ball bearings work with the least friction and, therefore, give maximum wear and service—American made and guaranteed.

Write for interesting literature

The New Departure Manufacturing Company, Bristol, Connecticut

Western Branch, 1016-17 Ford Building, Detroit, Michigan

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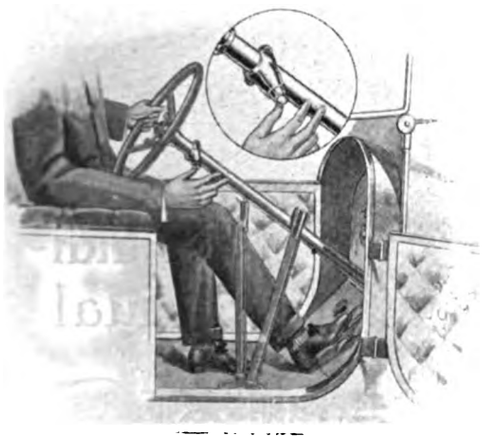
NoRisko
TRADE MARK
Steering Gear & Ignition Lock

Actually LOCKS the Car!

One Push of the Thumb Makes Your Car Thief-Proof!

NORISKO is the one lock that affords absolute protection to motor car owners. Instantaneously operated from the driver's seat. Has no complicated mechanism to get out of order—is the **only auto lock made** that **cannot** be tampered with without the continuous use of a steel-cutting drill.

Push the plunger **half way** in and **ignition is broken,** rendering the motor helpless; push it **all the way in,** with wheels turned at an angle to the curb, and the **steering gear is locked** in a position that makes removal of the car an absolute impossibility by any means short of hauling away on a truck.



This double protection provides for every emergency. On the road the

NoRisko
TRADE MARK
Steering Gear and Ignition Lock

both stalls the motor and locks the steering gear, preventing the car from being driven, pushed or towed away. In the garage ignition is broken only (preventing "joy rides"), while the steering gear is left unlocked to permit moving about as necessitated by washing, repair work, etc., or removal in case of fire. To free the NORISKO simply insert key in Corbin lock within the plunger and turn. Price complete (double type), $7.75; single type (steering gear lock only), $6.00.

Readily and Permanently Attached

Two safe screws secure the lock to steering-post without removal of wheel; when drawn up tight the heads twist off leaving each screw riveted and countersunk, flush with shackle. After attachment the lock becomes an integral part of the car and is non-removable.



Write for Our Special Dealer's Proposition

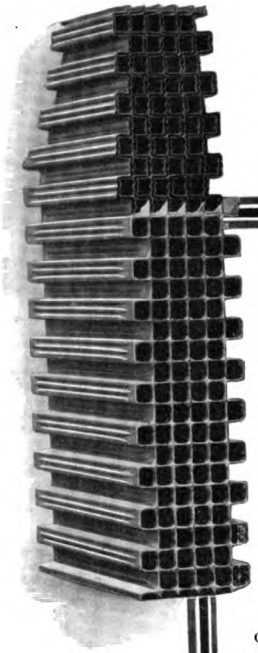
Aggressive accessory men everywhere will realize the opportunity that this novel, effective device presents for handsome profits. Every cautious motor car owner (pleasure or commercial) finds the NORISKO Lock a positive necessity. Send your address today for Special Dealer's Proposition and complete information.

C. J. ROGERS MFG. CO., 701 Abbott Building N. E. Cor. Broad and Race Sts. **Philadelphia, Pa.**

Branch Distributors: Auto Specialty Sales Co., 58th Street and Broadway, New York

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Livingston Radiator



Your customers who are cursing their boiling radiators right now will probably condemn them for freezing and cracking this winter—unless you change them to Livingston.

Livingston Radiators might well be called weather-proof radiators, for regardless of weather conditions their sole function and performance is doing their work without interruption.

Livingston Radiators cool your motor without boiling in summer, and if by chance you should freeze one in the winter it would not be injured in the thawing process.

It is to your interest to eliminate cooling troubles from your customers' cars and to lengthen the life and service of those cars by properly cooling the motor. The one way to furnish this service to your customers is by insisting upon Livingston Radiators upon the cars they buy.

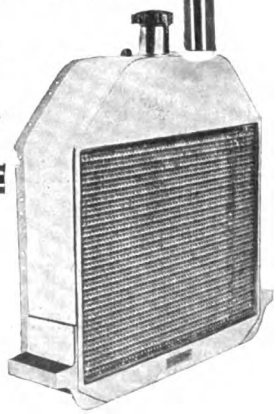
FORD DEALERS. We positively guarantee Livingston Radiators to cool Ford cars or money refunded after 30 days trial. We will allow you a good discount and furnish your customer with guaranteed cooling efficiency that will eliminate all troubles of an overheated motor.

Livingston Radiator and Mfg. Company

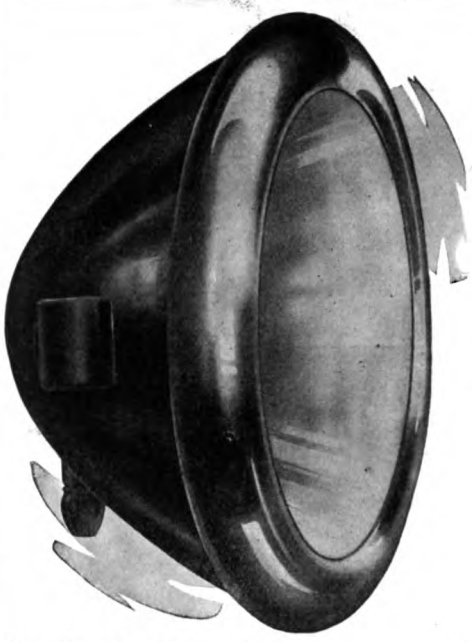
Randall Bldg, West 52d St., New York City

We Build Radiators for Individual Car—Owners

All Types of Radiators Built Rebuilt & Repaired



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GOLDEN GLOW
ELECTRIC LAMPS

The First and Only Lamps To Pierce Rain, Fog and Dust

Ever consider what lamps mean to the car?

They are the first, the greatest mark of the owner's judgment.

"Golden Glow" Lamps are the mark of the high-class car.

Not only the most beautiful lamps made—the first and only lamps that really pierce fog and mist—but——

The mirrored glass reflectors cannot tarnish—they need no polishing—are mounted so as to be unbreakable.

"Golden Glow" Lamps cost you no more than any high grade lamps with metal reflectors.

We feel we are not overstating a fact when we say——

"Golden Glow" Lamps possess more value—more individual and distinctive features than any other lamps on the market.

The proof awaits you in our "Try-out" offer.

"Golden Glow" Headlights

No projecting parts but the brackets. Special glass reflectors given wonderful penetrating power by secret process. Non-dazzling. Bulbs easily and quickly focused by screw in rear. Furnished in all black, black and brass or black and nickel finish, in 9¼, 11¼ or 12⅛ inch diameter sizes.



"All-Round Ruby Tail Lamp

The neatest and most attractive tail lamp ever offered comes to complete the "Golden Glow" line.

It is a casting of ruby glass, without a metal part but the socket and yet heavy enough to be practically unbreakable.

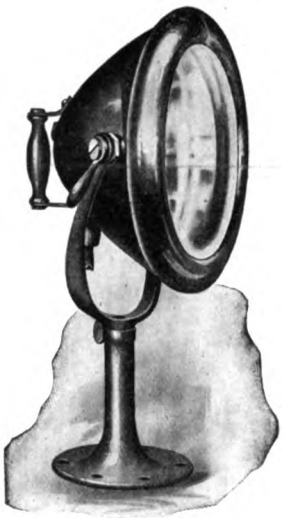
Being perfectly round it shows red from every direction with the exception of a white circle on one side to illuminate the license number.



"Golden Glow" Side Lights

Identical with the "Golden Glow" Headlights in practically every particular but size, these side lamps are offered with the view to adding materially to the appearance of the car.

Though small in diameter a pair of these side lights will give ample light for city driving.



"Golden Glow" Searchlights

Reflectors are of best quality materials—molded by the world's greatest makers of fine glass. Focusing is done by thumb screw adjustment conveniently placed.

This is the most powerful lamp ever made—the larger size being the equivalent of our special railway and steamboat Searchlight.

The "Golden Glow" Try-Out Plan

The Japanese have a proverb—"One look is worth a thousand words." One look at "Golden Glow" Lamps can tell you more of their merits than a hundred advertisements.

If your dealer cannot show you—send us your name and his on the coupon and we will arrange for you to actually try out Golden Glow Lamps on your car.

We will prove their value BEFORE YOU INVEST MONEY IN THEM.

Try out Golden Glows!

The "Golden Glow" Folder giving sizes, prices, and illustrated descriptions of these lamps for every purpose is yours by return mail on request.

Our special "Dealers' Proposition" is ready for live representatives in every city.

The ESTERLINE Co.

226 East South Street,
Indianapolis, Indiana

THE ESTERLINE COMPANY
226 East South St., Indianapolis, Ind.
Let me know about "Golden Glow."
Name.....
Address.....
Dealer's Name.....

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McCUE



WIRE WHEELS AGAIN WIN

Repeating their triumph in last year's Grand Prix, and maintaining the supremacy they won this year in the great American Sweepstakes Race at Indianapolis, WIRE WHEELS CARRIED THE TWO WINNING PEUGEOT CARS TO VICTORY IN THE 1913 GRAND PRIX (France) RACE, JULY 12TH.

GRAND

1st	Peugeot	Boillot	Wire Wheels
2nd	Peugeot	Goux	Wire Wheels

INDIANAPOLIS SWEEPSTAKES,

1st	Peugeot	Goux	Wire Wheels
2nd	Mercer	Wishart	Wire Wheels



It is the handwriting on the wall—a meaning everybody should heed.

For minor reasons such as strength, lightness and resiliency, racing drivers prefer wire wheels—but their greatest reason—the reason why wire wheels are far superior to wooden wheels, for general use as well as in racing contests, is their wonderful economy on tires.

McCue Wire Wheels use Standard (S) Spokes, made from

THE McCUE CO.



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WIRE WHEELS & AXLES



FRENCH GRAND PRIX

So far this year wire wheels have won America's and Europe's greatest contests, both supreme tests of endurance and speed, one a track race and the other a road race. THE TIME REQUIRED TO CHANGE TIRES IS OFTEN FATAL TO A DRIVER'S CHANCES OF WINNING. WIRE WHEELS ARE USED FOR THEIR TIRE ECONOMY.

PRIX

Peugeot 1st
Peugeot 2nd

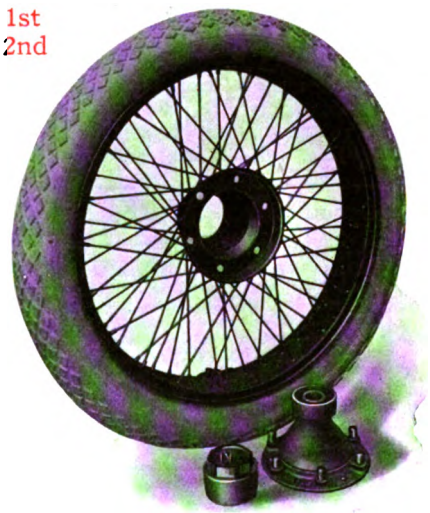
May 30, 1913

Peugeot 1st
Mercer 2nd

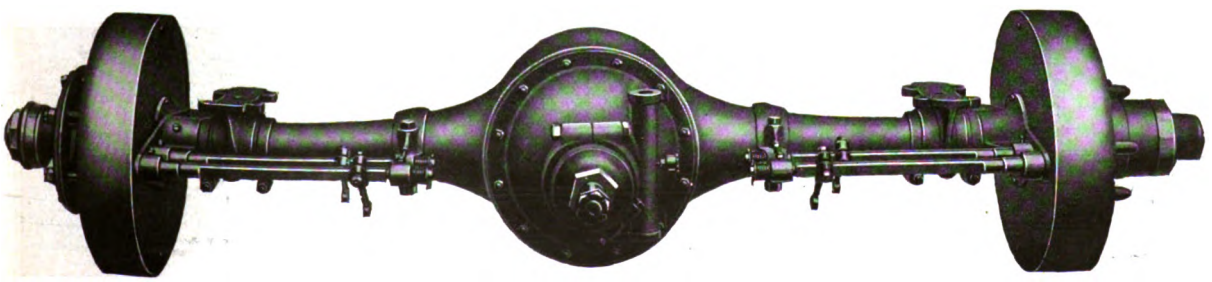
special drawn carbon steel, by the Standard Co. of Torrington, Conn.

It is right up to you, Mr. Dealer, to talk wire wheels to your customers, on the basis of giving them real car service at a minimum cost of upkeep.

Don't wait until it is too late. Insist that your allotment of cars come wire wheel equipped.



Buffalo, New York



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Honest Now, Mr. Automobile Dealer
Are You Making Enough Money?

Here's what a lot of dealers are up against. Maybe you're in this class. They are doing a good business—selling quite a bunch of cars and making a good profit, *if* they could *hang on to it*. But here's where the trouble comes in. Every time something goes wrong, (fancied or real) with the car of the customer, ting-a-ling goes the phone, or in comes Mr. Customer to have his car fixed up, and, of course, there can be no charge, because he bought it from Mr. Dealer and *he* is responsible.

Now there's just one way to dodge all this kind of trouble—get a car that doesn't need much of this kind of attention. Through all these 20 years of auto building, our one goal has been—make the Haynes perfect—make it so trustworthy and simple that it will stay in running order and give satisfaction through hard use and even abuse in the hands of unskilled drivers.

Connect up with the HAYNES

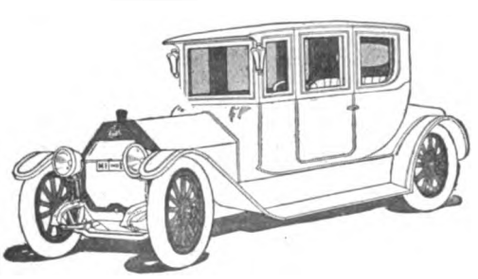
—the Car *Without* the "Come-Backs"

We'll be glad to tell you how simple the Haynes is in every part—glad to tell you how carefully each car is manufactured in our own shops or under our direct supervision—glad to tell you the tests which every separate part, and the car complete are required to meet. We'll also be glad to tell you what Haynes dealers say as to the satisfaction given by the Haynes and how little bother they have with "comebacks."

Specifications of The New Haynes

Motor—Bore 4 1-4 in., Stroke 5 1-2 in. L-head Haynes. Cylinders cast in pairs.
Cooling—Centrifugal pump and pressed steel fan.
Wheel Base—Model 26, 130. Model 27, 136. Model 28, 118.
Ignition—American Simms Magneto.
Lubrication—Splash and gravity feed.
Control—Left hand. Vulcan Electric Gear Shift.
Transmission—Selective Type, three speeds forward, one reverse.
Steering Column—Worm and worm gear type.
Clutch—Haynes contracting steel band.
Rear Axle—Full Floating Timken on Models 26 and 27; McCue, Model 28, Gourney Bearings.
Front Axle—I-Beam. O. H. steel heat treated.
Wheels—Artillery type. Funk demountable rims.
Tires—Models 26 and 27, 36 x 4 1-2 Model 28, 34 x 4.
Springs—Front Semi-elliptic 39 1-8 x 2, rear 48 x 2.
Brakes—15 1-4 external and 15 internal Models 26 and 27. 12 and 16 internal on Model 28.
Finish—Indiana dark blue body.
Gasoline Feed—Pressure. Automatic feed.
Upholstery—Buffed leather—deep cushions.
Starting and Lighting—Leece-Neville electrical system.
Dash Equipment—Electric lights, sight oil feed, automatic cut-out for generator, dash light, auxiliary air pressure pump, air gauge and speedometer, Models 26 and 27 have rim wind clock.
Other Standard Equipment—Top, top cover of silk mohair, mechanical tire pump, rain vision ventilating wind-shield, Vulcan electric gear shift, two large electric headlights, electric side lights, electric tail light, full dash equipment, electric starter, generator, 80 ampere hour storage battery, speedometer, horn, coat and foot rails, tire irons, full tool equipment, and one extra demountable rim.







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The New Haynes Models Have the Season's Biggest Feature—the Vulcan Electric Gear Shift

Here's another thing a lot of dealers are up against—and maybe this also applies to you. They're handling a good car, gives good satisfaction, customers pretty well pleased, but the drawback is—there is nothing different, nothing distinctive about the car to make people go out of their way to come in and see it.

The new Haynes has a selling wallop that brings the prospects in and helps you put over the sales. In addition to everything that can be desired in the way of comfort, convenience, equipment and prestige of twenty years building—it has the wonderful Vulcan Electric Gear Shift.

Connect up with the

HAYNES

—the Car That Is Always *First*

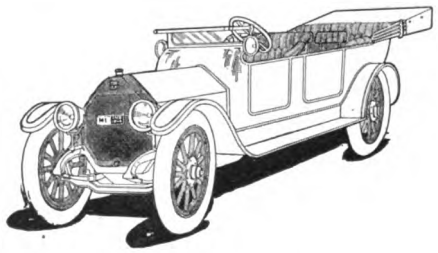
True to its reputation as pioneer and pacemaker, the Haynes was first to adopt this, the greatest improvement in automobile equipment. Added to the electric self-starter and electric lighting, is everything else in the way of modern equipment—it makes the Haynes the strongest kind of a selling proposition. Read the specifications and see for yourself.

Get After the Haynes Agency Today

If you are in business for money, not merely for your health—if you would like to get hold of the agency for a car that's a live seller, that's famous for its quality and dependability—that stays sold and stops the "profit-killing come-backs"—if you would like to do business with a *stand-by* and a *fixture* in the auto business, insure your business for the future—and if you would like to make the coming year *your biggest year*, write us today about the Haynes, America's First Car and the car with the wonderful Vulcan Elecric Gear Shift.

The Haynes Automobile Co., 1 Main St., Kokomo, Ind.







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Next Week Begins the National Advertising of Continental Motors

Twelve of the leading weekly and monthly magazines are going to tell the general public what you—what every car owner—everybody connected either directly or indirectly with the automobile industry already knows—that Continental Motors are America's Standard.

Continental advertising is going to make the Continental Motor and its superiority a household word—on the tongue of everybody who reads and rides.

It is going to make still quicker and easier the selling of cars and trucks equipped with Continental Motors.

Continental Motors are going to be a bigger selling asset than ever.

Continental advertising is going to tell the public the history of ten successful years in which 75,000 Continental Motors have carried 75,000 car owners over many millions of easy miles.

It is going to tell the public how Continental Motors, with all their silence, won the slogan, "Powerful as the Nation."

If you are representing a car or a truck built around the Continental Motor, **cash in on Continental advertising.** Advertise it locally. It is going to help sell cars.

For the motor is the vital, the most important single factor in a motor car. It will be the basis by which a car is judged and sold, because it represents more than 20 per cent. of the maker's cost and 50 per cent. of whether the car is a good or bad investment.

If you do not represent a Continental-powered car, get one. You won't regret it. Over half a hundred makers of both pleasure cars and trucks have specified more than 40,000 Continental motors for 1914.

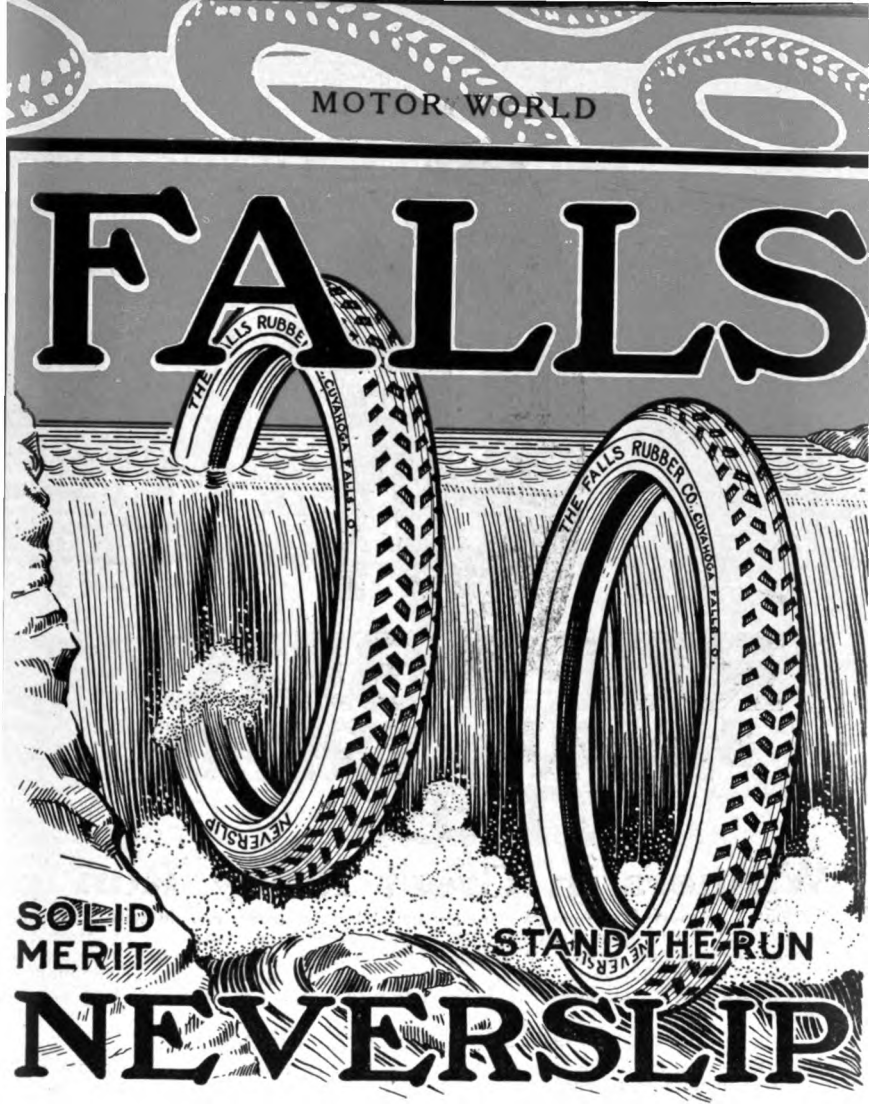
Now is the time. Next season is almost here.

CONTINENTAL MOTOR MFG. COMPANY

Largest exclusive motor builders in the world

Factories: Detroit, Muskegon, Michigan **Detroit, Michigan**

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You Make a Wise Choice When You Tour With Falls Neverslip Tires

The tread which has numerous sharp edges gripping the road surface from every angle, preventing a skid by not even allowing it to start.

An excellent reason why Falls Neverslip give extra service.

Buttons and knobs start separation of tread. Falls depressions prevent loose treads and remain a solid mass until the tread is entirely worn out. THIS MEANS MORE SERVICE.

It is worth your while to get our literature and find out more about Falls service.

We still have some good territory open for live agents.

THE FALLS RUBBER COMPANY

Cuyahoga Falls, Ohio

Eastern Distributor,
ROYAL TIRE COMPANY,
833 7th Ave., New York.
DAHL PUNCTURELESS TIRE CO.,
Philadelphia, Pa.

Northwestern Distributor,
NAEGELE & LAMB,
1204 Hennepin Ave., Minneapolis.
PRIGGE BROS.,
1344 Michigan Ave., Chicago, Ill.

F. J. ALLEN & BROS., 2001 Euclid Ave., Cleveland, O.

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REPUBLIC
STAGGARD TREAD TIRES

Winners in Great Relay Run

The Boy Scouts of America on June 24 were entrusted by President Wilson with a message to Mayor Carter Harrison at Chicago. Four days later the message was delivered on time for the formal opening of the Olympic games. Accompanying the Scouts was the Staver—Chicago News car, the only automobile to make the entire trip. When the Press car was equipped, Republic Staggard Tread Tires were selected because of their reputation for staying qualities and they lived up to their reputation as

THE WORLD'S QUALITY TIRES

The trip was especially trying because of the minimum speed which had to be maintained from start to finish. Over mountains, through mud and under terrific road conditions the Staggard Treads made the trip without a single mishap, finishing with the original air—convincing evidence that they are the best mileage tires in the world today.

THE REPUBLIC RUBBER COMPANY, Youngstown, Ohio

Branches and Agencies in the principal Cities

Republic Staggard Tread Patented Sept. 15, 22, 1908

Standing at the rear of the auto are John O. Seys and Lambert G. Sullivan, Chicago News representatives, both of whom made the entire trip.



SOUTH BEND, IND. GOSHEN, IND. TOLEDO, O. CLEVELAND, O. YOUNGSTOWN, OHIO HOME OF REPUBLIC TIRES PITTSBURGH, PA. BEDFORD, PA. GETTYSBURG, PA. FREDERICK, MD.

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THE STURDY

STUTZ

MADE GOOD IN A DAY

Announcement of the Stutz Series E Cars—four and six cylinder

No radical mechanical changes—they were not necessary

The Stutz has been given every test anyone could ask or demand.

It has been sent up against all comers in the hottest races of the world. Racing is subjecting a car to every possible disadvantage in the shortest possible space of time. Out of such tests comes either a car or a memory.

Harry C. Stutz, designer of the Stutz, built his first car in five short weeks, and it finished the first 500-mile race at Indianapolis without even a mechanical adjustment, and jumped into fame over night.

Since that time the Stutz has been entered in thirty-five races, and has to its credit twenty-five victories. It holds the track record for 200 miles. The 500-mile race at the Speedway, Indianapolis, is conceded the most difficult of all races. Any car that even finishes such a race possesses unusual merit.

In 1912, the second 500-mile race, the Stutz landed fourth and sixth places against cars some of which had nearly twice its piston displacement.

The 1913 500-mile event credits the Stutz with third place. Its consistent racing record is equalled only by the service it has rendered to individual owners. Out of all the racing tests has come a better and a truer Stutz. It has proved to everyone that it possesses speed, power, stamina, staunchness, security, safety and strength.

The Stutz is a car of fundamentals which embodies known, tested and proved principles of motor car building and motor car service.

Stutz Features

A Digest of the Peers

1 Dependable Electric Starter.
2 Lighting System—Remy electric generator with storage battery
3 Cone clutch
4 4¾ x 5½ T-head motor in 4-cylinder models; 4x5 T-head motor in 6-cylinder models
5 Stutz special rear system
6 Timken front axle
7 Gemmer steering gear
8 Force feed oiling system through hollow crank shaft.
9 Tires 34 x 4 1-2.
10 Black and nickel trimmings throughout.

Stutz Cars are made in both four and six-cylinder models.

New models now ready

While we have not made any radical changes—they were not necessary—still we found it possible to add a few more refinements and conveniences—making these new models even more desirable than the previous Stutz cars.

For instance, the bodies of the touring cars are larger, roomier, and even more comfortable than heretofore. The upholstering will be generally more luxurious, and the springs a little longer.

The electric starting, lighting and ignition systems employed in the Stutz are separate units, thus eliminating any chance of complication. The self-starter is so simple that a child can understand it. It works quietly and certainly. Electrical experts regard our installation as the simplest, and therefore the best, on the market.

All the special Stutz features that insure strength, speed, sturdiness, ease of operation, have been retained.

Financial responsibility back of the Stutz

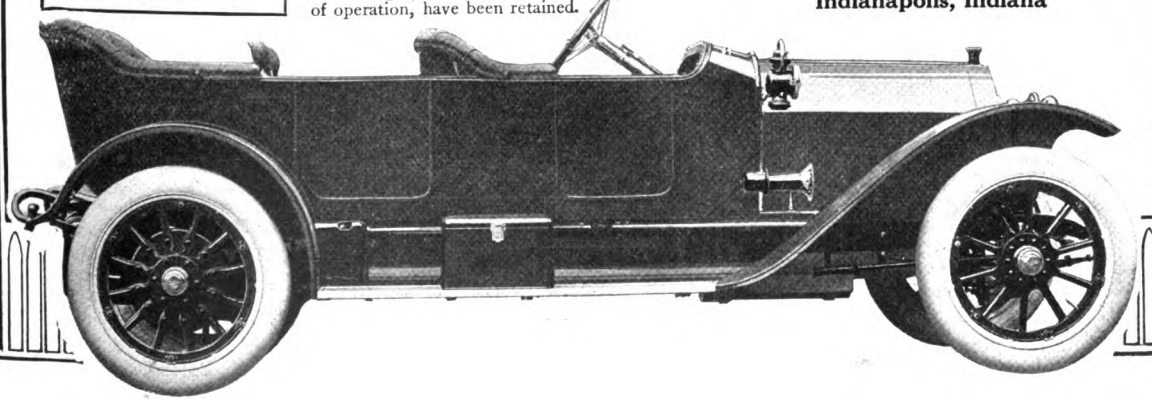
Back of the Stutz car is an institution that is substantial, solid and financially responsible.

Our method of manufacture, as well as the sales distribution, has ever been safe, sane and economical—always with the idea of giving each Stutz owner full measure for his money.

If you are in the market for a car let us know and we will put you in touch with the nearest Stutz dealer—and also send you our new Series E catalog, No. A-15.

There are a few points where we are not now represented. We invite correspondence with responsible dealers.

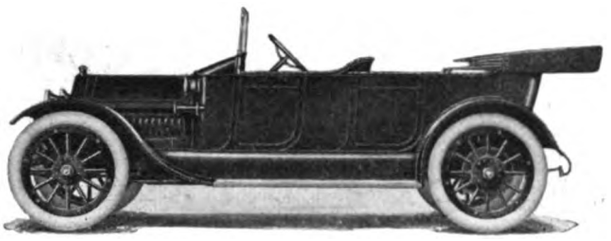
Stutz Motor Car Company
Indianapolis, Indiana



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Lyons-Knight

"THE CAR OF SILENCE"



$2,900

Outline Specifications

ENGINE—Lyons-Knight, four cylinder, four cycle, 4½ inch bore, 5½ inch stroke, water cooled.

HORSEPOWER—50.

OILING—Lyons-Knight pressure feed to all bearings, pistons and sleeves, regulated in accordance to engine power.

CARBURETOR — Improved double jet, especially designed with adjustment on steering column.

IGNITION — Dual, water-proof, high-tension magneto.

CLUTCH—Three plate, Raybestos faced.

TRANSMISSION — Silent, selective, three-speed, sliding gear type embodied in rear axle housing.

DRIVING GEAR—Worm drive, silent, smooth and always efficient in operation.

REAR AXLE—Full floating, Timken bearings.

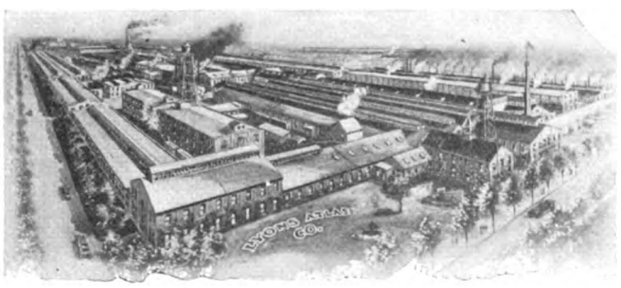
BRAKES—Two sets, double acting, internal and external on 16-inch rear wheel drums.

FRONT AXLE—Timken drop forged "I" beam with roller bearings in steering heads and hubs.

WHEEL BASE—130 inches, tread 56 inches.

WHEELS—Wood with quick detachable, demountable rims and 37 x 5 inch tires front and rear. Wire wheels special.

GASOLINE TANK—22 gallon capacity, on upper part of dash over toe board, giving gravity feed direct to carburetor.



The Lyons-Atlas Factory

Including 65 acres, six hundred and twenty-seven thousand square feet of floor space, six miles of railroad with locomotives and cars, giving a capacity for fifty thousand Lyons-Knight cars a year and backed by ample capital to produce this number or more.

The Proposition

Here in brief are a few of the many individual and distinctive features of this car—announced here for the first time. Every element of the Lyons-Knight car is the culmination of years of effort and test—the best that engineering brains, backed by the facilities and materials of ample capital, can afford. Judge these few points:

Famous Knight Engine

During five years of successful use the Knight engine has proved its wonderful stability and endurance. Its famous test by the Royal Automobile Club, of four years ago, has never been equaled, either in the severity of the test or power delivered. In the International Sweepstakes 500 mile race at Indianapolis, May 30th, a Knight car finished fifth. It had the smallest engine in the race, having 250 cubic inches piston displacement against 448 cubic inches of the winner. It was acknowledged by far the quietest, smoothest running car on the track. Its record for economy in tires was remarkable. The water in the radiator registered 130 degrees at the start—130 degrees at the finish. It did not replenish either water, oil or gasoline during the whole race.

The Knight engine has proved in actual service by the testimony of owners, that it becomes better, more powerful, more efficient, after 100,000 miles of operation.

Worm Drive

"Like continuous coasting," is the term used by one passenger to express the smooth, silent operation of the Lyons-Knight car. Added to the silent, smooth-running Lyons-Knight engine is another great feature—WORM DRIVE. The worm gear insures absolute freedom from noise, roughness, vibration and grinding. Reports of the Society of Automobile Engineers show that while more expensive to manufacture than other gears, it is the nearest approach to 100% efficiency in the delivery of power to the axle. It also becomes better with use—gives more power and efficiency year after year.

"The Car of Silence"

Because of:

Silent improved Knight engine,
Silent worm gear drive axle,
Silent improved electric starter,
Silent transmission,
Silent chain for engine parts.

The really startling thing about the Lyons-Knight is its remarkable silence and absolute freedom from vibration. The most delicate woman or child can ride in it for hours at high speed without the slightest fatigue. Noise means excessive friction and wear, and is directly responsible for the fatigue experienced in motoring. All mechanical noises have been entirely eliminated in the Lyons-Knight—the quietest car built. We want you to compare this exceptional car in every detail of construction and equipment with the costliest imported and American cars. We believe you will find it equally as good—and in the multitude of individual and distinctive features and details, superior. We think you will readily agree no such value has ever been offered among cars of the first grade.

Get the Details

Any description of the details that could be crowded into an advertisement would fail to do justice to the car, since so much would have to be left out. But in justice to yourself you ought to know them before investing $2,000 or $3,000 more than is necessary in purchasing a car that will meet your highest ideals in service, capacity and class. Nor is there any reason why you should be content with a medium grade car when the best is within the reach of every man of moderate means. It is worth your while to study the details of this very remarkable car.

Write for the Lyons-Knight catalogue today.

Write for Complete Information

The Lyons Atlas Co.

INDIANAPOLIS IND

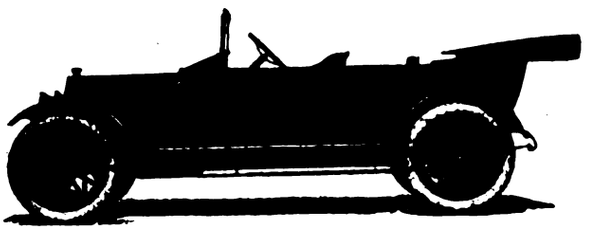
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Lyons-Knight

"THE CAR OF SILENCE"

To Dealers

$2,980



You—who have had experience—know the greatest argument for any good car are the facts.

We are not making empty promises about the Lyons-Knight car. We want to give you facts!

Here Is What the Lyons-Knight Actually Gives:

(1) A big, high-powered car, combining six cylinder smoothness, flexibility and efficiency with four cylinder economy.

(2) A car with more distinctive and individual features—of better design and quality than has ever been offered at $5000.

(3) Silent Knight motor, silent worm drive, giving absolute freedom from vibration, growing better with 100,000 miles of service.

(4) The most complete facilities for manufacture backed by ample capital, insuring prompt deliveries on all orders.

(5) A most aggressive sales policy, including a great national advertising campaign to make the Lyons-Knight first among high-class cars.

(6) A most liberal dealer's proposition backed by extensive local advertising and sales effort from the factory to help every dealer make greater profits from Lyons-Knight cars.

(7) A complete line including large and small four cylinder Knight cars, six cylinder Knight cars, and light and heavy commercial cars with Knight motors.

What more can you ask for in any car? If you have other requirements—ask about them. The Lyons-Knight proposition may include them also.

You can write us.

We can describe the many distinctive and exclusive features of this car.

The catalog will give you some idea of it.

Our dealer's proposition is most liberal from your standpoint.

But the best way to know the whole matter is to get the facts for yourself.

The Lyons-Atlas factory is a reality. The Lyons-Knight car is not an idea—but an accomplished fact—the cars themselves are ready for delivery.

Come—see for yourself.

Sell the car to yourself first.

View every part in the course of manufacture.

Compare facilities, design, materials and workmanship with what any other automobile factory actually offers.

Ride in the Lyons-Knight. Judge if any car—at any price—offers so much downright motor car satisfaction.

Every experienced dealer that has come to the factory has been fired with enthusiasm by what he saw.

Already we have closed much important territory with the best established, most experienced dealers. They have been quick to realize the big, profitable factors in this Lyons-Knight proposition. This opportunity may still be open in your territory. Write and we will let you know promptly.

Write for Complete Information

Outline Specifications

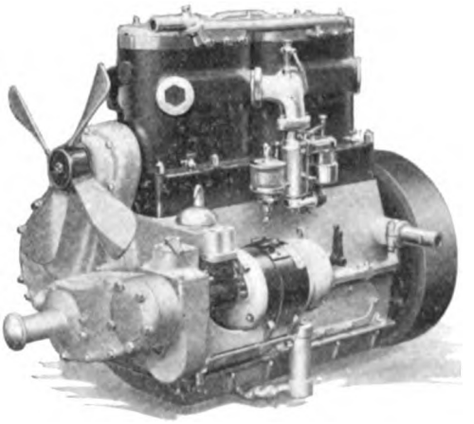
DRIVE—Left hand with center control.

BODIES—Exclusive design, with maximum room and comfort. Sheet aluminum with extra deep, soft, hand-buffed upholstery.

FINISH—Standard colors, dark blue and Brewster Green, with black and nickel trimmings.

EQUIPMENT—Electric starting and lighting, with dash lamp and two-tone electric horn, patent one-man pantasote top with drop side curtains, special windshield with ventilator, dust cover, speedometer and clock, combination tire holder and trunk rack, two extra demountable rims, coat and foot rails, cocoa matting in tonneau and complete tool and tire outfit.

PRICES—Five Passenger Touring Car $2900; Seven Passenger Touring Car $2980; Sedan Type $3900; Berline Type $4300; f.o.b factory, Indianapolis, Indiana.



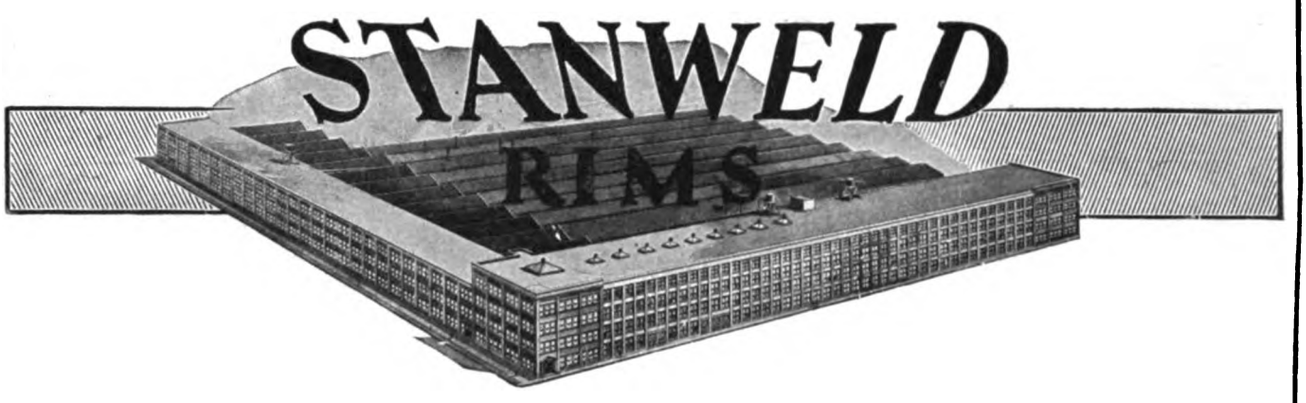
The Lyons-Knight Engine

This four cylinder Knight engine actually gives the power, smoothness and flexibility of a six-cylinder poppet-valve engine of 50% greater displacement. Its many individual features make it superior in silence, smoothness, reliability, economy and power. Ask for actual proofs by test.

The Lyons Atlas Co.

INDIANAPOLIS IND.

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NO automobile manufacturer can make the claim that he is giving his customers the utmost in safety, satisfaction and service, and not equip his car with Stanweld Demountable Rims.

Stanweld Demountable Rims are good rims—good all the way through.

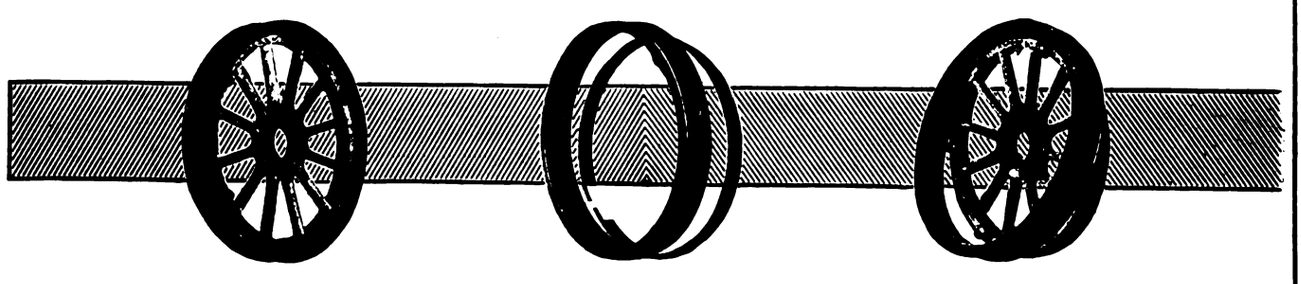
They are made of a high-quality steel, and by expert workmen. They prevent tire-wobbling—one of the prime causes of excessive tire wear. They require no special tools. They have a solid base—excluding dirt and moisture. They accept either straight-side or clincher tires. They have both the quick-detaching and demountable features—operating independently.

They are safe, easy and quick to operate, and require fewer manipulations to change a casing or tube than any other type of demountable rim.

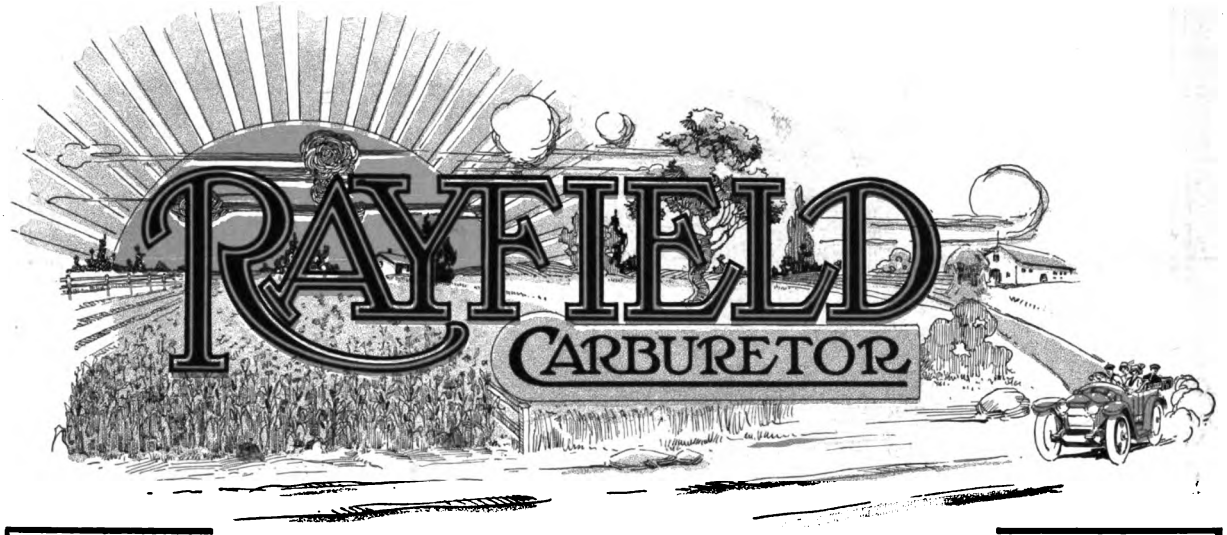
One manufacturer will use nearly 50,000 sets during the coming season.

The Standard Welding Company, Cleveland

Distributors in Principal Cities of the United States



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Points the Way to Real Fuel Economy In the "Six"

In actual performance—on a stock car—the Rayfield has established the world's record for fuel economy with a six-cylinder car.

The record is 20 miles on a gallon of gasoline.

The car was a Knox, six-cylinder, 60-horsepower.

The authority is the Springfield Automobile Club of Massachusetts; and the Rayfield made its remarkable record in the Club's economy contest, under A. A. A. sanction, enabling the Knox to win first position among water-cooled cars.

This is indeed a wonderful performance; but its real significance lies in what the Rayfield promises and has actually done in this instance—in the operation of six-cylinder cars.

Thus the Rayfield again emphasizes its right to supremacy in economy—by sending a large powerful six-cylinder car 20 miles on one gallon of gasoline.

Excessive fuel consumption is a marked characteristic of all six-cylinder cars as compared to the four.

"More miles per gallon" is a cry that is world-wide among motorists.

It would seem that the Rayfield is the answer.

Rayfield users know its remarkable economy. Racing contests time and again have proved its ability to extract the last iota of power and speed from gasoline.

But this we believe to be the most important of all the records that have crowned the Rayfield.

There is a lesson here for both manufacturer and owner—a lesson it behooves both to heed.

All we ask is that you investigate the Rayfield—investigate and compare.

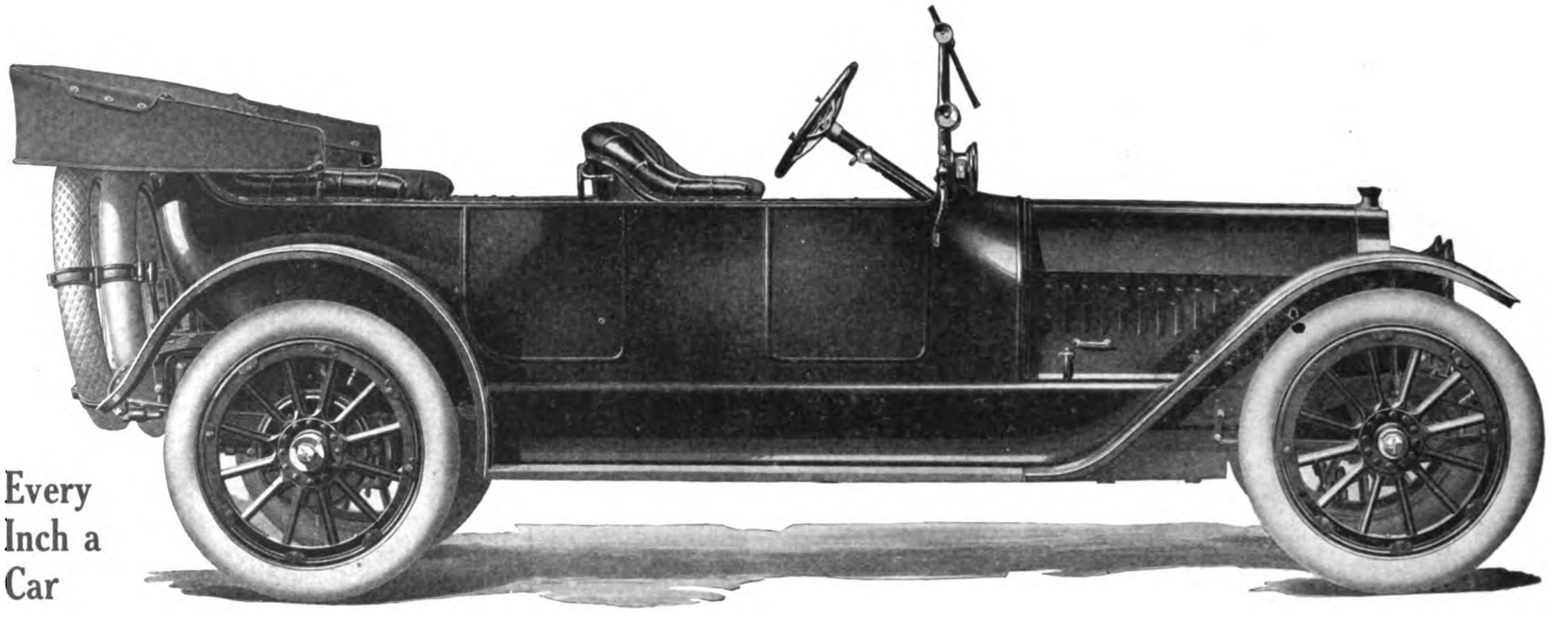
FINDEISEN & KROPF MANUFACTURING COMPANY

21st and Rockwell Streets, Chicago

BRANCHES:

1140 Michigan Avenue, Chicago — 1902 Broadway, New York — 1211 Woodward Avenue, Detroit

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Every Inch a Car

A Striking New "Six" at $2350

A NEW model has been added to the KisselKar line—THE 48 "SIX"—a silent, powerful, well groomed thoroughbred, that sets a new level of comparison and is bound to turn discriminating automobile buyers in the direction of the KisselKar.

The announcement of this new KisselKar model is of greater significance than an ordinary announcement because it carries with it a notice of changing conditions in automobile making—the establishment of values and prices upon a more solid and settled manufacturing basis.

A few years ago, when the KisselKar 60 "Six" was announced, it was at once acclaimed the sensational value in "Sixes." It was the first "Six" to respond to the demand for a high powered six cylinder automobile at a moderate price. HISTORY IS NOW REPEATING ITSELF.

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KISSELKAR

Electric Lighted and Started 48 "Six" *Left Hand Drive Center Control*

In presenting the new KisselKar 48 "Six" at $2350, the Kissel Motor Car Company is again making automobile history as it did with the big KisselKar 60 "Six" five years ago.

The KisselKar 48 "Six" is the latest big thing in six cylinder automobiles. Point for point, it challenges comparison—in construction, performance, comfort and refinement.

The design is strikingly handsome and original, representing the very best ideas of American and European body construction—a design we expect to see freely copied a year hence. In the 48 "Six" we have succeeded in producing a liberally designed, roomy five passenger six cylinder automobile of medium size that fills the gap between the so-called "little sixes" and the high powered "big sixes."

It requires but a slight study of the KisselKar 48 "Six" to prove it a worthy exponent of all that is best in automobile construction. Its smooth running, silent, powerful and flexible motor has loads of excess power, and is responsive to every demand. Clean, graceful lines, low hanging body, perfect poise and balance, big roomy tonneau, extra long wheelbase, big tires, extra deep, luxuriously upholstered seats combine to make the KisselKar 48 "Six" a car of superlative beauty and riding comfort.

TO OWNERS

The KisselKar line now comprises three striking pleasure car models—the new 48 "Six" at $2350, the 60 "Six" at $3150 and the 40 "Four" at $1850—each an unsurpassed value in its class. An illustrated portfolio giving all details of each model will be sent on request.

TO DEALERS

Our recently acquired Milwaukee plant will be devoted exclusively to the manufacture of the KisselKar 48 "Six." As this gives us a largely increased output, we are in position to add to our list of desirable distributors. If interested, write.

KisselKar Trucks—1500 lbs. to 6 tons—are used in over 200 distinct lines of business. Write for Truck Catalog.

KISSEL MOTOR CAR COMPANY, 159 Kissel Ave., Hartford, Wis.

BOSTON NEW YORK CHICAGO MILWAUKEE KANSAS CITY MINNEAPOLIS ST. PAUL
DALLAS SAN FRANCISCO LOS ANGELES OAKLAND

Philadelphia, Detroit, Houston, El Paso, New Orleans, Washington, Baltimore, Nashville, Duluth, Buffalo, Pittsburgh, Hartford, Conn., New Haven, Albany, Troy, Rochester, Providence, Montreal, Quebec, Toronto, Winnipeg, Calgary, and 200 other principal points throughout America.

Features of the New KisselKar 48 "Six"

An entirely new model in design of chassis and body along with the very latest ideas of motor car building.

Specially constructed frame hung close to the ground, with large "kick-up" in front and rear—providing plenty of spring clearance and allowing more flexible springs and riding comfort.

Clean and simple construction—at a glance you are impressed with the few number of parts.

Tonneau without boxes or brackets to mar the effect of simple completeness.

Rakish new design fenders with rounding tops instead of flat.

Front axle of foreign design with the castor principle, which allows easy turning of car and avoids accidents as the wheels are always kept in line. The construction of this axle also adds strength to the knuckles and main parts.

Large doors, 21 inches wide, and 5-passenger tonneau with room to spare.

Deep, low, properly proportioned seats. Backs pitched for extreme comfort—and cushioned with the finest upholstery.

Patented Golde top, which eliminates front brackets. This top is used only on the very best cars and is remarkably easy to put up and take down.

The "cowl" is equipped with a mahogany board on which all instruments are placed—accessible and convenient to line of vision.

Large 4½ x 36 inch tires—giving the car oversize tires for its weight.

Special flexible spring construction which takes up the jolts and jars.

Extra long wheelbase, 132 inches—which provides space for roomy tonneaus and contributes to riding comfort.

Large gasoline tank (24 gal.) and tire irons in the rear.

Left-hand drive and center control.

Electric started. A simple and positive system that makes starting easy and sure.

Electric lighted. Big, powerful electric lights of twice the candle power of average cars.

Powerful, easily accessible, long stroke motor, with large crank shafts carefully balanced—capable of developing plenty of excess power. Silent, smooth running, responsive.

Four speed transmission—direct drive on third.

Cone leather faced clutch can be disassembled without removing transmission or motor.

The KisselKar 48 "Six" is fully equipped in every detail and embodies every desirable feature for the comfort and convenience of the car owner.

KisselKar Service

The KisselKar is sold under a written guarantee of service to owners—a tangible, definite and specific contract that clearly stipulates the scope of KisselKar Service and provides for care that forestalls trouble and retards depreciation.

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MORE EFFICIENT SALESMANSHIP

is generally admitted to be

THE GREATEST NEED OF THE TRADE

MOTOR WORLD

is doing its part to render the need less acute by

"Improving the Breed of Salesmen"

One of its most recent efforts in that direction is the

Offer of Four Cash Prizes

$30 — $20 — $15 — $10

for the best four articles conforming to the title

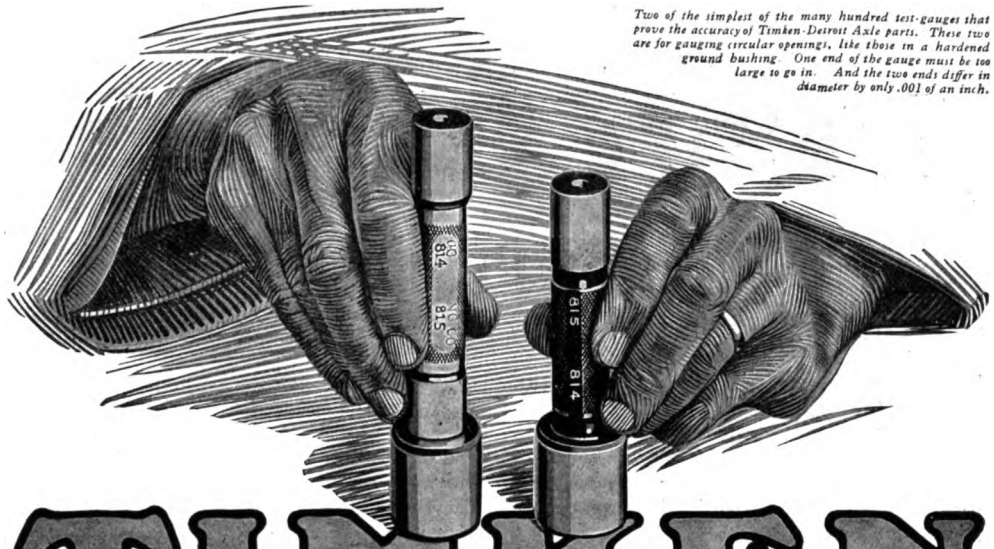
"My Best Sale; How It Was Made"

The competition is open to everyone who ever sold a car, truck or accessory, but all articles submitted must be received prior to September 1st, next. Non de plumes may be employed, if desired.

If ever YOU made a sale of which you are particularly proud, now's a good time to prove it.

All Contributions to be Addressed:
Contest Editor, Motor World, 1600 Broadway, New York

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Two of the simplest of the many hundred test-gauges that prove the accuracy of Timken-Detroit Axle parts. These two are for gauging circular openings, like those in a hardened ground bushing. One end of the gauge must be too large to go in. And the two ends differ in diameter by only .001 of an inch.

TIMKEN
AXLES & BEARINGS

WHEN you ride in your motor-car do you ever think how much of your comfort and safety you owe to the axles beneath you? Those axles are no mere solid bars of steel. Their hundreds of parts are combined into wonderful mechanisms that drive the car, change its direction, and allow the rear wheels to revolve at different speeds in turning corners.

And, day in and day out they carry the whole load, and take the incessant shocks and vibration of hard travel.

Every part in those axles has a duty to perform.

Every part must be correctly designed for that duty.

It is one thing to make these hundreds of pieces of metal right.

It is another—and just as essential—to prove them right after they are made.

Both are equally important to your satisfaction—and to your safety.

In a Timken-Detroit Front Axle are 125 pieces, in a Rear Axle 723—The 858 are, we believe, the smallest number compatible with strength and safety.

In addition there are 248 separate pieces in the Timken Tapered Roller Bearings on the axle spindles, in the steering pivots, at the differential and on the pinion shaft.

Yet, counting each complete Timken Bearing as only one piece, there are 848 pieces in a set of Timken-Detroit Axles (front and rear) involving 4221 separate operations!

4221 Operations and not one is left to chance

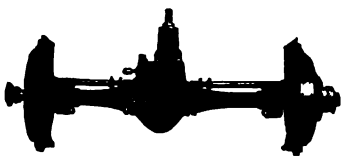
Every operation has its inspection, every inspection its gauge—some require several gauges.

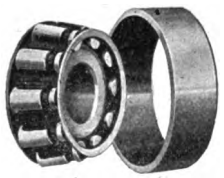
Not one is left to chance, every one is proven.

And back of all are the Swedish Gauges—the highest standard of accuracy in the world.

Back farther-still is the ideal of a great organization of men whose one goal is axle perfection in every smallest detail.

The study of axle and bearing importance is not a dry, technical subject. It is full of live, human-interest stories, and a revelation of the wonders of the modern motor-car. Write today for the Timken Primers, No. T-1 "On the Anatomy of Automobile Axles", No. T-2 "On the Care and Character of Bearings."





The one bearing whose tapered rollers enable it to meet greatest load plus end-thrust, and that is perfectly adjustable for the slight wear that will come to any moving parts, is the Timken Tapered Roller Bearing. No other has ever been used in Timken-Detroit Axles.

The Timken-Detroit Axle Company
Detroit, Mich.

The Timken Roller Bearing Company
Canton, Ohio.



(27)

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HEAVY CAR TYPE

FISK TIRES

Confidence

THE FOUNDATION of all business is CONFIDENCE. The Fisk Rubber Company, from its start, 14 years ago, has had this one idea always dominantly in mind. The original plant comprised only 23,000 square feet of floor space. With the completion of the buildings now under way, the floor space will cover approximately 14 acres—a remarkable growth.

This growth has been due to a concentrated effort to exclusively produce pneumatic tires, with the result that *today we are the largest exclusively pneumatic tire builders in the world.* For more than two years we have been running night and day to endeavor to supply the ever increasing demand—which demand has been built up by the CONFIDENCE the public has placed in the Company. Eighty per cent (80%) of our product goes directly to consumers replacing original equipment.

The manufacturing department has always had but one instruction—that is, to build the best tire that it is capable of producing, from the best materials, with expert workmanship and with the aid of the most advanced methods and equipment.

Labor saving devices, the most modern rubber machinery (some of it designed by our own experts) all go to make our plant the most modern tire plant in the world, and this ultimately benefits the user.

The FISK ORGANIZATION has been developed along the line of CONFIDENCE. *We* have Confidence in our Product and in our Organization and we want *you* to have it in *us*. This you will have when you come in closer contact with us.

Service

SERVICE is a much abused word. It is often used without any regard as to what it really means. The word SERVICE behind any product means nothing, unless the interpretation of the word by the manufacturer is sincere and honest. SERVICE is that intangible something that gives you full value when you deal with a company in which you have CONFIDENCE, and that manifests a personal interest in all details of any transaction.

Fisk Tires are manufactured in a model plant at Chicopee Falls, Massachusetts. They are distributed through 41 Branches located in the principal cities of the United States and by 18,000 Dealers.

These Branches have been established and developed under the personal supervision of the President of the Company. To this supervision is due their present day efficiency.

The Fisk Branches have been established upon the same basis as the factory. They are in reality miniature factories, and at the head of each department is found an expert.

The knowledge that these men possess is freely given at all times to tire users and has repeatedly been successful in solving tire problems.

Write Department 23 for Fisk Dealer Proposition

The Fisk Rubber Company

Factory and Home Office Chicopee Falls, Mass.

DISTRIBUTORS

THE FISK RUBBER COMPANY OF N. Y. BRANCHES IN 41 CITIES

FISK PNEUMATIC TIRES ARE GUARANTEED WHEN FILLED WITH *AIR* AT THE RECOMMENDED PRESSURE AND ATTACHED TO A RIM BEARING EITHER ONE OR BOTH OF THE ACCOMPANYING INSPECTION STAMPS. WHEN FILLED WITH ANY SUBSTITUTE FOR *AIR* OR ATTACHED TO ANY OTHER RIMS THAN THOSE SPECIFIED, OUR GUARANTEE IS WITHDRAWN

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s Rolled Steel in ngs Cuts Upkeep

Cleveland-Canton Automobile Springs

Steel experts have reached the limit, they say, in the new process used in making steel for Cleveland-Canton Chrome-Vanadium Automobile Springs.

This process is exactly the reverse of old-style methods, where bars are rolled longitudinally only.

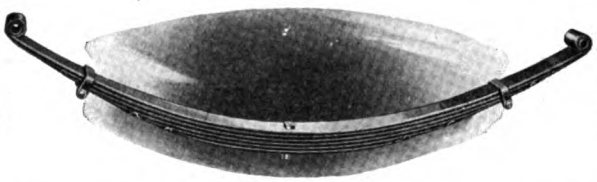
In this new, patented method, the material is worked both **longitudinally** and **transversely,** or as it is termed, "cross-rolled." By working the material in two directions, an astoundingly uniform, homogeneous, tough, springy steel is obtained.

Then it is tempered, by a special process, heat-treated with oil, given three exacting tests, and finally fitted by hand.

No other springs are made like these. No other springs have such endurance, such strength.

Cross-Rolled, Chrome-Vanadium

"Not a Bump In One of Them"



"Built for Life-Long Endurance"

Motorists who know Chrome-Vanadium Springs enjoy real comfort, real safety.

For such springs protect the engine and delicate mechanism as no other springs can do. *In five years not one Cleveland-Canton Chrome-Vanadium Spring returned because of breakage or settling.*

These are reasons why Cleveland-Canton Chrome-Vanadium Springs are being used on thousands of new cars this year, why makers who have adopted them will never go back to ordinary springs, why our output increased 100% over last year. You ought to know more about springs so unusual as these. We'll be glad to figure with you, and give you full information. Write today.

Best Grade—Chrome-Vanadium
Next Best—Special Analysis

The Cleveland-Canton Spring Company
Canton, Ohio, U. S. A.

VELAND ARK
NTON

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INVADER OIL



THERE ARE ANY NUMBER OF OIL SALESMEN but it is not always easy to believe what they tell you.

THERE ARE ANY NUMBER OF OIL COMPANIES who fill the pages of magazines with advertisements of their various oils, but it is not always easy to believe what they tell you, either.

ONE OIL COMPANY prints a list of automobile manufacturers, who, it is to be inferred from the language employed, are "vigorously insisting" upon owners of their cars using this particular oil—while as a matter of fact, ***over 70 per cent. of these manufacturers have stated in reply to written inquiries that they either use or recommend an entirely different make of oil.***

ANOTHER OIL COMPANY states that their oil is superior to other oils because it will not "freeze"—while as a matter of fact a motor oil is required to stand heat, not cold. A capacity to withstand cold indicates that the oil has an asphalt base, which is probably the worst thing that can be said about a motor oil.

ANOTHER OIL COMPANY states that their oil is "accurately compounded and scientifically prepared"—which means exactly nothing.

ANOTHER OIL COMPANY states that their oil contains "no carbon"—which is a physical impossibility since carbon is one of the elements of which all mineral oils are composed. (All oils must contain some carbon.)

AND THE VERY OIL COMPANY who claims to know the most and who asks you to use the oil they make because they are the world's foremost experts on lubrication, ***once had some brass tags printed and attached them to the motors of a certain make of automobile, advising the use of a black steam cylinder oil.*** They might as well have recommended a good grade of glue.

THE WHOLE TRUTH OF THE MATTER is that a majority of both those who make oil and those who sell it either know absolutely nothing whatever about it ***or else they are not willing to be honest about it,*** and what they say and what they print proves it.



INVADER OIL

(Lessees of Charles

Main Office: 81 Broad St., New York **Factories: New York and Philadelphia**

Territorial Agents { BOYER-CAMPBELL CO., Detroit, Mich. / BECK & CORBITT IRON CO., St. Louis, Mo. } MOTOR CAR SUPPLY CO., Chicago, Ill / THE LEE HARDWARE CO., Salina, Kansas.

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INVADER OIL

THESE are the facts. An automobile oil is required to do two things—(1) lubricate, and (2) burn up cleanly—and the ability of any oil to perform these operations can be absolutely determined by the employment of a few simple physical tests.

Take the gravity test as an illustration. Everyone knows that carbon in a motor oil is objectionable, and that the amount of carbon in an oil is proportionate to its weight or gravity. The lighter the gravity, the less carbon the oil contains, and, other things being equal, the better the oil will be.

To ascertain which of two oils has the lightest gravity and the least carbon is easily done. Simply take two samples of oil in glass bottles (Invader Oil and any other) and pour a few drops of the other oil into the Invader Oil. If the other oil sinks to the bottom of the Invader Oil it is because the other oil has a heavier gravity—it will contain more carbon—it will not be so good an oil for automobile lubrication.

To say that an oil with low tests is superior to an oil with high tests is absurd. It is equivalent to saying that 5 pounds of iron weighs more than 7 pounds of iron.

An unsupported statement, therefore, to the effect that one brand of oil is better than another means absolutely nothing. ***The fact that Invader Oils have better tests than other oils, however, means everything.***

The only question which the buyer of Invader Oil has to consider is whether or not Invader Oil is worth its difference in price. ***The fact that it is a better oil cannot be contradicted.***

P. S.—I-O-C GEAR OIL is the only oil ever made especially and exclusively for the lubrication of automobile transmission gears. "It puts noisy gears to sleep." Write for prices and descriptive booklet.

COMPANY

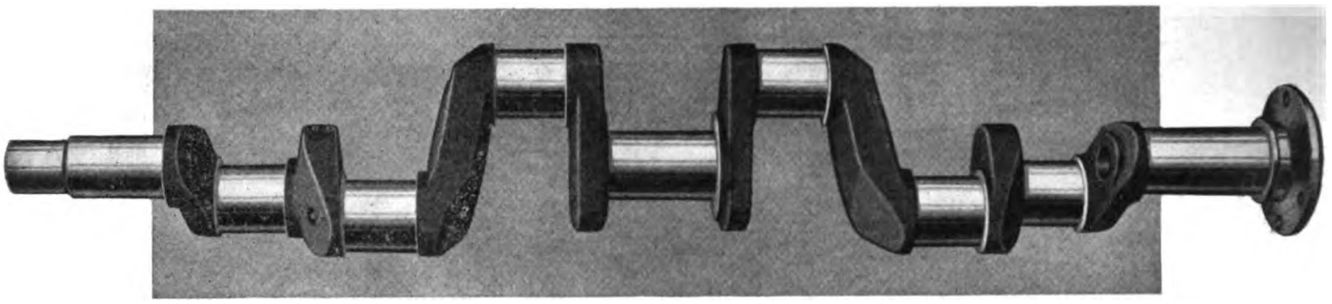
F. Kellom & Co.)

Branches } BOSTON 284 Columbus Avenue
WASHINGTON 3627 New Hampshire Avenue, N. W.
PHILADELPHIA 113 Arch Street and 719 N. Broad Street

ELECTRIC MFG. CO., St. Paul, Minn.
JAMES BAILEY CO., Portland, Me.
AMERICAN LUBRICATING & SUPPLY CO., Kansas City, Mo.



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We Are One of the Pioneers in Machining Crankshafts

—been machining crankshafts exclusively for years. Our plant is second to none in the completeness of its equipment. Every machine is up-to-date and the best that money can buy.

But, machinery and plant are things that money can buy in the open market. They can be duplicated. Therefore we claim no special merit for ours except that they are the best.

The feature that makes MICHIGAN CRANKSHAFTS better, finer, more accurate, and saves time, money and patience on the part of the engine builder or car manufacturer is the skill and experience that comes from specializing on one particular job for many years.

You get better SERVICE all the way through when you deal with us——

Because of concentration and longer experience.

Because we limit our capacity—don't crowd—never take more business than we can handle.

Because of completer equipment—result of specializing on one thing.

Because we make deliveries when promised. And——

Because closer inspection at our plant assures fewer rejections from you. Last year we had **less than two per cent. rejects.**

We are after your business. You will like our way of handling it. Better not wait too long before sending your blue-prints.

MICHIGAN CRANK SHAFT CO.
LANSING, MICH.

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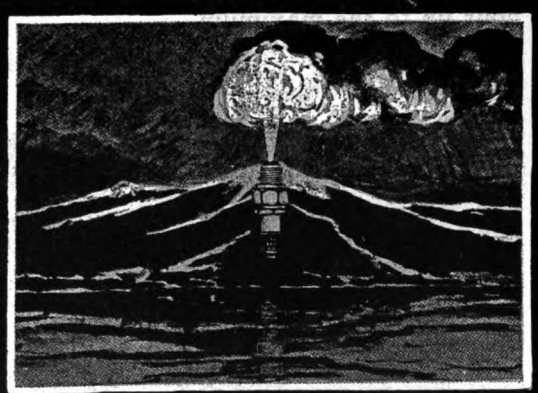
STOP !!!!!

Imagine a plug that will last forever

WATCH !!!!!

Mosler

Vesuvius Plug

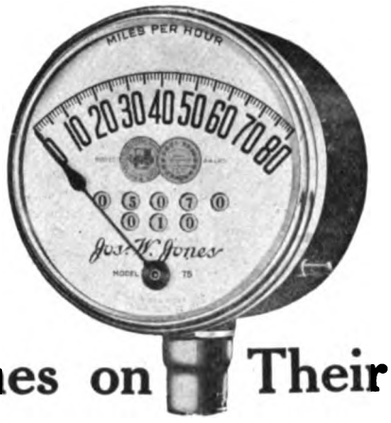


AS POWERFUL AND AS INDESTRUCTIBLE AS THE FIRES OF VESUVIUS

WE CARRY IN STOCK A PLUG FOR EVERY Internal Combustion Engine Built

A. R. MOSLER & CO.
P. O. Box "M," MT. VERNON, N. Y.

The King of England
The Emperor of Germany
The Czar of Russia
The King of Spain
The President of France



The King of Italy
The King of Belgium
The King of Sweden
The King of Denmark
The President of Switzerland

Use the Jones on Their Private Cars

The Jones Leads

in the Famous Motoring Countries

—in England, France, Germany, Russia, Belgium, Italy, Spain, Denmark, Switzerland and Sweden, no other speedometer sells like it. In America alone, this year, 200,000 cars will be equipped with the Jones Speedometer in addition to the thousands of Jones' used on cars abroad.

There are no other countries in which so much attention is paid to accuracy in mechanical construction. The Jones has always led abroad because it is the accurate speedometer. That fact is never questioned. No foreign car, or instrument, is more carefully produced.

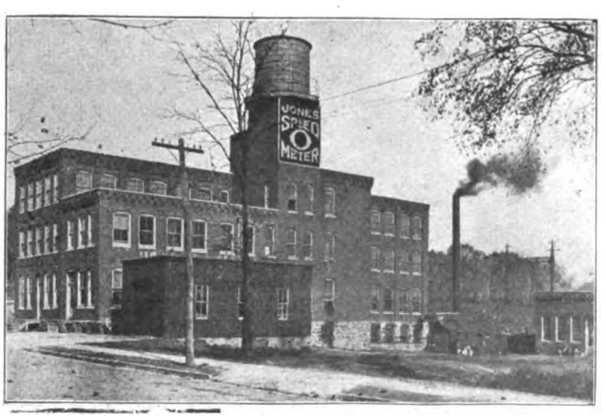
That is why the Jones is true.

Winter and summer, without compensators, the Jones remains absolutely accurate. It tells the true speed at every speed—from one mile per hour up to the maximum.

It responds at once to every speed impulse. No sluggish pick up. No slow return. That is because of unbroken connection between the road and the indicator.

The hand moves or rests as steadily as the hand of a watch. No quivering. No vibration whatever. The immovable dial makes reading easy. So do the large, black figures. These are the facts we are telling to people who are thinking of your car.

Every month in the country's greatest magazines we are showing page and double-page ads. Some 15,000,000 people are becoming convinced of Jones worth in this way. Already there is a double demand for the New Jones Speedometer. People are using their cars the year 'round and they want "year-'round" accuracy. In all our experience there was never a time when this single feature meant so much. Every car maker should give it careful thought.



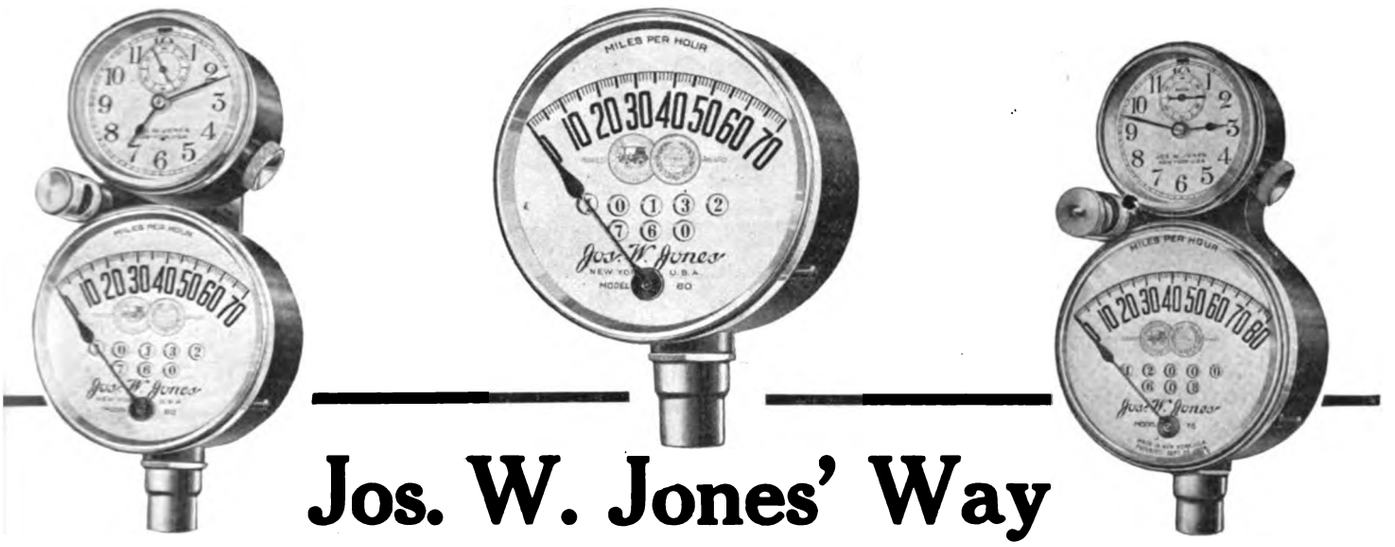
THE JONES SPEEDOMETER

BRANCHES

New York, Broadway at 76th St
Boston, 109 Massachusetts Ave.
Philadelphia, 1427 Vine St.
Chicago, 1430 Michigan Ave.
Baltimore, 217 W. Saratoga St.
Detroit, 872 Woodward Ave.
Buffalo, 20 Goodrich St.
Pittsburgh, 3604 Penn Ave.
Cleveland, 1845 Euclid Ave.
Charlotte, 209 Church St.
Memphis, Madison Av. and 4th St.
Minneapolis, 800 Hennepin Ave.
Omaha, 1608 Harney St.
San Francisco, 1436 Van Ness Ave.
Los Angeles, 406 W. Pico St.
Portland, Ore., 71 Seventh St.
Seattle, 1710 Broadway
Indianapolis, 1201 State Life Bldg.
Atlanta, 35 N. Pryor St.
New Orleans, Barrone & Perdido Sts.
Birmingham, 18 S. 20th St.
Denver, 1600 Broadway

The New Jones

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Jos. W. Jones' Way

There are several ways to build a Speedometer.

This is how Jos. W. Jones—called the Master of Accuracy—does it: He uses the Gyroscope Principle. That avoids, without any special arrangement, all the effects of heat and cold. It insures absolutely accurate reading in both summer and winter temperatures. It permits of Jones Accuracy in every Jones Instrument—even the least expensive models.

Mr. Jones invented the speedometer for use on motor cars. He invented the Disc Record for talking machines, which made it possible for those machines to reproduce sound more accurately.

Some 50 inventions are to his credit, and accuracy is the keynote in all of them.

In the New Jones Speedometer he has bent every effort to surpass everything else in this respect.

Micrometer Exactness

He has made every part that turns in a bearing measure up to the ten-thousandth part of an inch. He has hardened all bearings by the Harvey Process and ground them to absolute exactness to eliminate wear and insure lasting accuracy. He has further protected every Jones instrument with 58 hardened, imported steel balls in these bearings. He has given each instrument countless inspections—and 16 running tests.

In Service 13 Years

This is the Standard for every Jones Instrument. He has put his signature on the New Jones as a sign that it meets with his every requirement—that each shows the true speed—and that each will last years under tests the most strenuous driver can give it.

Because of these standards, old Jones instruments are serving on their fifth and sixth cars—instruments made 13 years ago. Owners have volunteered the evidence.

Don't you want a speedometer that is good for these years on your car?

Gyroscope Principle

A Gyroscopic ring revolves at an angle in the New Jones. The faster it spins, the more nearly horizontal the ring has the tendency to set—the higher its lower edge is raised.

That change in its angle directly effects the movement of the hand on the dial. There is no surer way to indicate speed.

Write Us

We will send a representative to see you if you wish. He has all the Jones facts and the Jones proposition at his finger tips. When will be convenient?



Broadway at 76th St., New York City

FOREIGN AGENCIES

Milan & Son., Ltd., Montreal, Toronto, Winnipeg, Vancouver
Kent & Co. (London), Ltd., London
Kent & Co., Hamburg, Milan, Vienna, Barcelona
A. A. Kaufmath (Brussels), Ltd., Brussels, Amsterdam
Kent & Co., St. Petersburg
G. Bruggemann, Moscow
William D. Easy & Co., Sydney, Australia
The Tarrant Motor Co., Melbourne, Australia
C. E. Helvie, Manila, P. I.
Adams, Ltd., Christchurch, New Zealand
Markt & Schaefer Co., Rio de Janeiro, Brazil; Buenos Aires, Argentine; Mexico City, Mex.; Habana, Cuba; San Juan, P. R.
Y. D. Rose, Paris

Speedometer

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Hartford Cone Clutches

PRACTICALLY every automobile and truck manufacturer who started equipping with Hartford Cone Clutches has continued to do so ever since.

Each year we have added to our list of customers, booking contracts for their cone clutch requirements invariably each succeeding year.

This is true in both pleasure car and commercial truck branches of the industry.

We have done our part to merit this kind of business. We have always made cone clutches—being firmly convinced that the cone type was superior to any other.

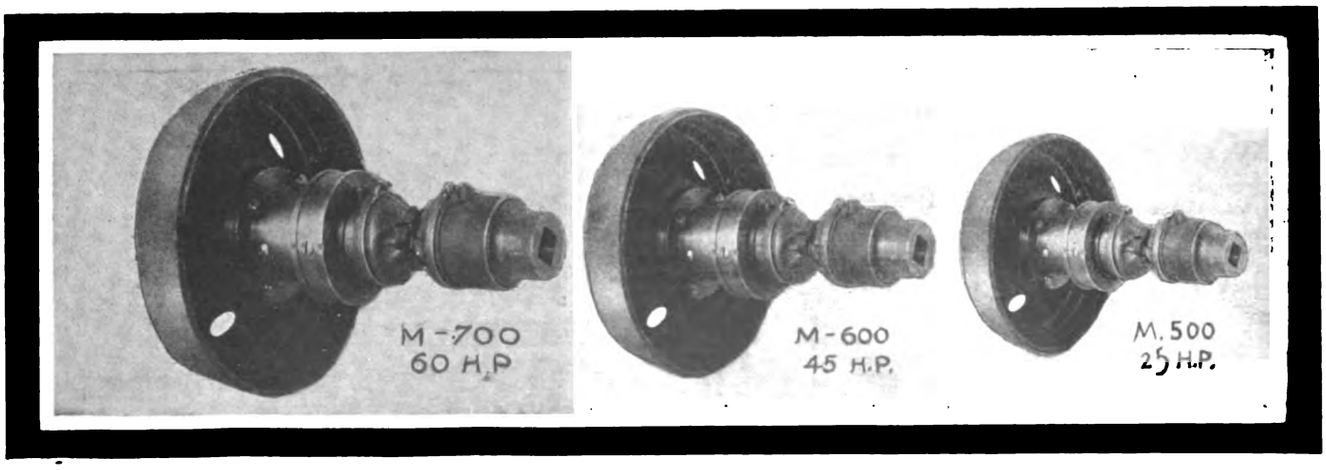
Of course we are making a better clutch today than ever before. Our equipment of special machinery enables us to simplify operations and to do more accurate work.

Our machinists and mechanics, (many of them have been with us for years) are clutch specialists, not merely skilled mechanics.

All these things: the way our customers stay with us, the consistent increase each year, our ability to produce efficient and trouble-proof clutches and to meet delivery dates promptly have a meaning to manufacturers and designing engineers. Those in the trade already familiar with Hartford Cone Clutches know the value of a clutch of correct principle, made of the best materials, in shops where special machines are operated by clutch specialists.

The meaning is just this. Hartford Cone Clutches do their work better than others and are never a piont of weakness in the make-up of either pleasure cars or trucks.

Hartford Auto Parts Company
HARTFORD, CONN.



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The Knight Motor Best

Poppet valve motor in official test falls far below the Knight record

This is the story of two 38 horsepower automobile engines—one a six-cylinder *poppet valve* motor of 1913 design, and the other a four-cylinder *Knight sleeve valve* motor built in 1909—four years ago.

The poppet valve motor was tested by the Automobile Club of America—the Knight by the Royal Automobile Club of England.

The poppet valve motor was under observation 300 hours—*the Knight for 320 hours.*

The maximum pewer of the poppet valve was 44.9—*the Knight 59.*

The average power of the poppet valve was 35.7—*the Knight 53.*

The minimum pewer of the poppet valve was 28.7—*the Knight 51.*

At the end of the tests the poppet valve motor was found to be delivering less power than at the beginning, while the Knight showed considerably more.

During the test of the poppet valve engine, valves were twice adjusted when the power fell off—*during the test of the Knight motor no adjustments to the mechanism were made at any time.*

It is conceded that the poppet valve motor which was thus tested is one of the most highly developed poppet valve engines manufactured; that the test was conducted by the Automobile Club of America is proof that it was accurate. Hence the superiority of the Knight type motor has been proven *by the poppet valve itself*, and again supports the statement that—

The Stearns-Knight "Four" is better than any poppet valve "Six," and that—

The only car better than the Stearns-Knight "Four" is the Stearns-Knight "Six."

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The most sensational feature of the 500-mile Indianapolis Decoration Day race was the performance of a 25 H. P. Knight-motored car, which, although by far the smallest car in the contest, ran consistently throughout, averaged nearly 70 miles an hour, and did not take oil or water from start to finish. It defeated 19 high-powered foreign and American machines, and finished fifth behind cars of far greater power.

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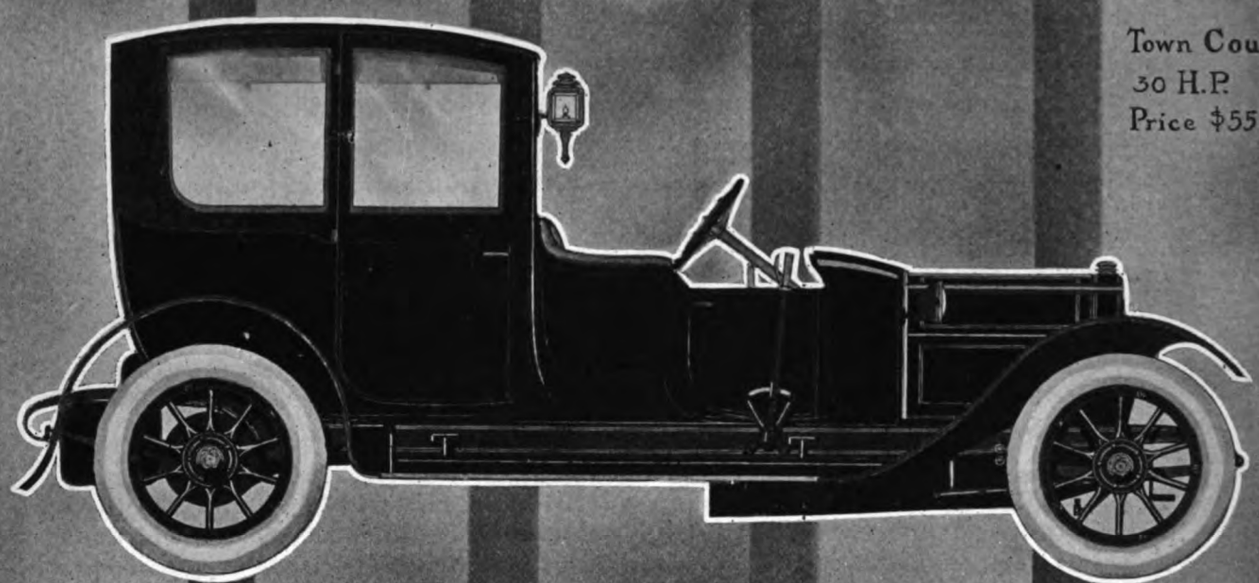
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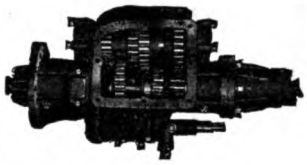
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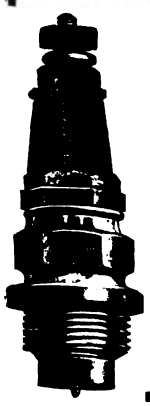
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The rubber compound used in Kelly-Springfield Tires couldn't wear so long if the tires weren't hand made. Which means a good deal when you come to think that no other prominent tire manufacturers produce either hand made tires or a rubber composition backed by seventeen years' experience.

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SOOT PROOF Spark Plugs have sold best for 12 years. They are self cleaning and you can guarantee them to be free from short circuits.

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Weed Tire Chains enable you to safely make sharp turns and quick stops when a momentary loss of control means loss of life.

The above picture illustrates one of the numerous situations in which you may be placed during bad road weather — when suddenly someone appears directly in your path and in a fraction of a second you must make a sharp turn and apply the brakes. It is then you require a firm unfailing grip on the road which can only be obtained by equipping ***all*** tires with

Weed Anti-Skid Chains

The Only Device that Absolutely Prevents Skidding

The memory of one accident deters future enjoyment in the use of a car. Why run the risk of such accidents and why forfeit the pleasures of motoring ***forever after, when safety can surely be yours by equipping all four tires with WEED CHAINS?***

WEED CHAINS cannot injure tires because "they creep." Easily put on in a jiffy without the use of a jack or other tools. Directions packed with every pair.

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WEED CHAINS are generally regarded as the most profitable accessory for the automobile Dealer — Extensively Advertised — Easily Handled — Quick Sellers — No Dead Stock — No Dull Seasons — Liberal Profits — Satisfaction Guaranteed.

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MARATHON

SPEED ENDURANCE

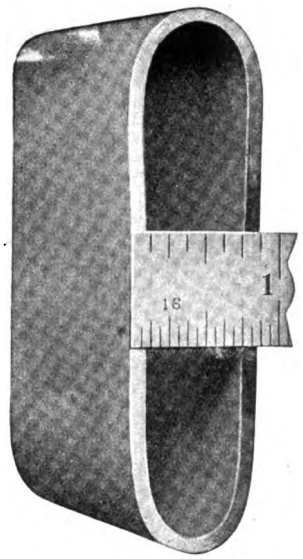
Double Strength Red

INNER TUBES

50% of tire troubles result from poor inner tubes, because ordinary tubes are only about half as thick and half as strong as they should be. Dealers know that.

Men are demanding better tubes—more rubber and better rubber—not mere compound.

The Marathon tube comes to fill that demand. It gives just what motorists have long wanted. It gives all that can be built into a tube. Here are the reasons why it is best, and why you should sell Marathon.



Para-Rubber

In Marathon tubes we give the utmost in quality — the best tube quality known, and we'll prove it. They are made of **Para-Rubber**, prepared by our special formula. This gives it greatest strength and toughness and very long life. Such quality cuts our profit, but it is certain to win and hold the business.

6-Ply Red Stock

To obtain utter perfection and utmost strength we use 6 plies of stock (9 plies in 4½ to 6 in. sizes). That prevents all flaws and weakness. The chemical action of our red coloring matter renders the Pure Gum non-heat effective. This tube will not stick to casing, where pure gum grey tube will.

Weighed and Measured

Each Marathon tube is put to a double test for accuracy.

The raw tube is first weighed and then measured. If it falls short of the exacting standard, it does not pass. Thus we secure absolute accuracy and uniformity.

Doubly Thick and Strong

Thus you see how we put double strength and double efficiency into Marathon Red Tubes.

Note the illustration. It is an actual photograph of a section of 34 x 4 inch Marathon tube. It is nearly twice as thick as the ordinary tube. It is very difficult to pinch, and twice as hard to puncture.

Think how this tube must save trouble and expense.

Dealers, write for special Proposition and a sample section. Then you will sell this tube.

Compare This Tire



Compare the Marathon tire with the next best you know.

And remember these Marathon features: Only Top-Test materials are used. The utmost in quality is built into Marathons.

We build Marathons by hand, very slowly, to insure utmost accuracy. We use the Marathon single cure process, which insures unit construction.

We concentrate the tread—build it thickest where most wear comes. We give the great angle non-skid tread, and beneath it a thick plain tread. We give a rigid 4,000 mile guarantee. But the average mileage is far above that.

Compare this tire with others, and you'll sell Marathons.

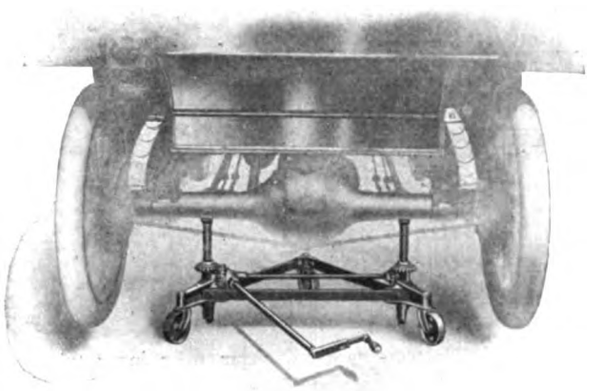
Write for our agency proposition.

The Marathon Tire & Rubber Company

Cuyahoga Falls, Ohio

Distributors in Most Large Cities

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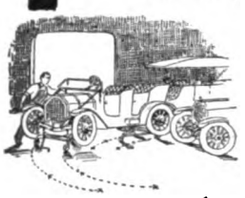


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WEAVER
Auto Twin-Jacks

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There is scarcely a minute of the day that these Jacks can not save money for the garage owner. Time, Labor and Floor Space cost money and Weaver Auto Twin-Jacks will save one-third of this expenditure.



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Wherever cars are to be handled—in the repair shop—storage room—show room—paint shop—or unloading from freight cars—these jacks and ONE man can do the work in a few minutes' time.

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The casters and lifting mechanism are ball and roller bearing throughout. The heaviest pleasure car can be raised with ease. Lifting leverage of 400 to 1; 34-inch wheelbase; wheels have 2-inch face; weight of each jack complete, 47 lbs.

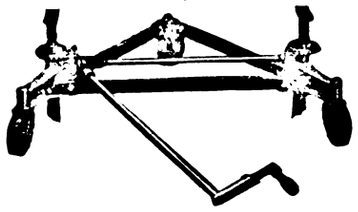
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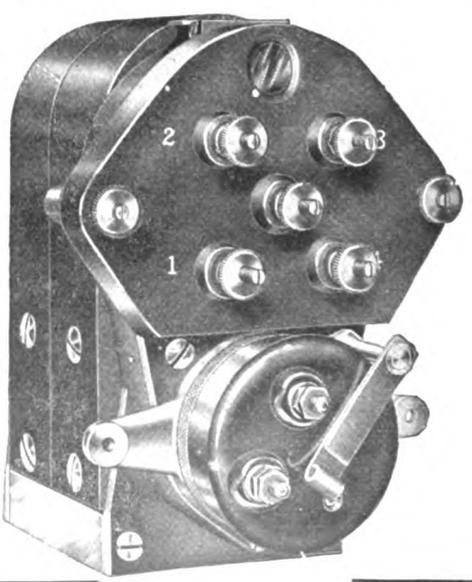
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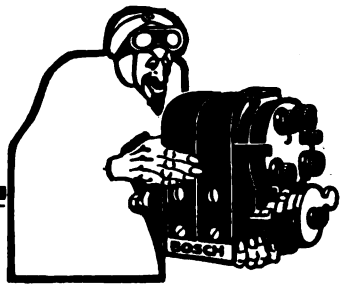
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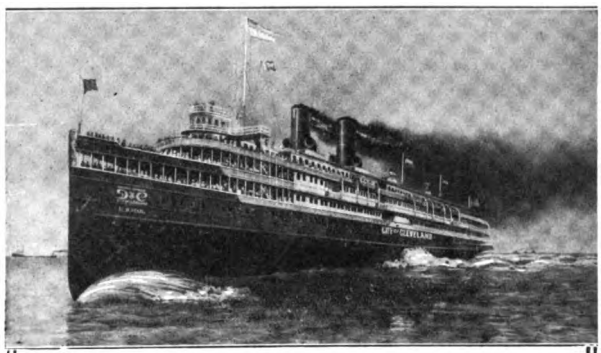
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Loose fitting protectors, due usually to stretching.

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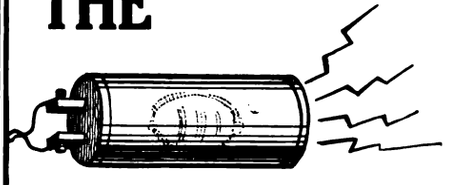
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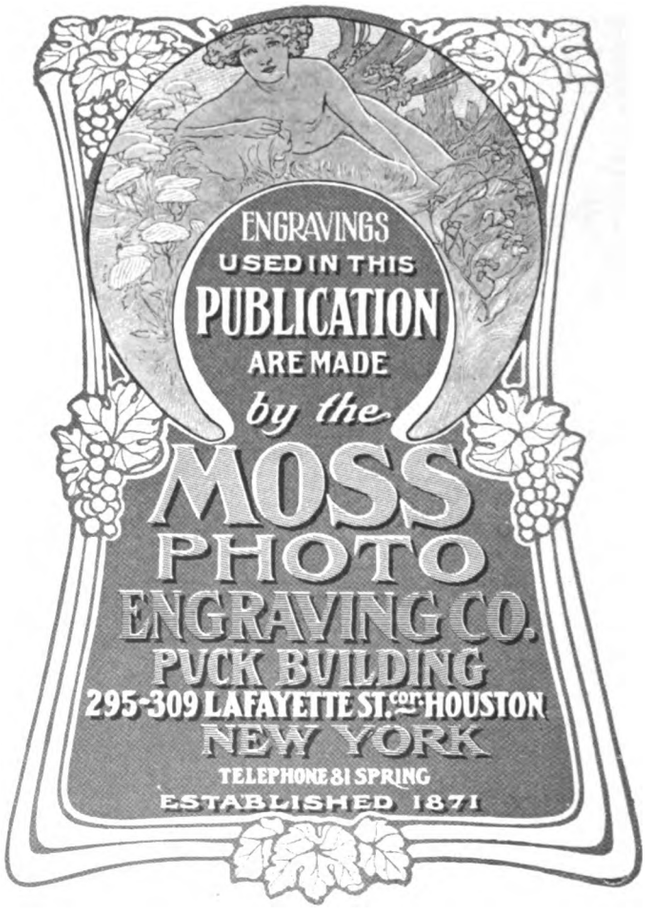
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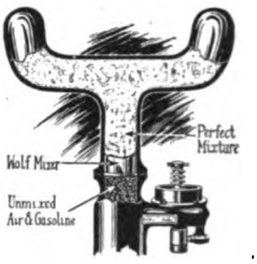
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Special Ford Type - -	**1.00**

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Jersey City Established 1827 New Jersey

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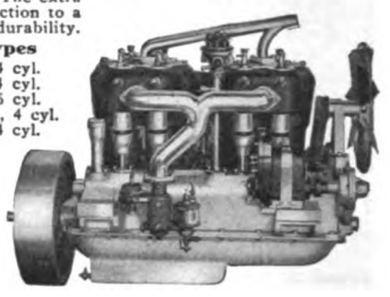
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The crank shaft is of large diameter—a self-contained oiling system supplied by a gear pump through the hollow crank shaft provides perfect oiling. The extra large bearings reduce friction to a minimum and increase durability.

All 4 Cycle--in 5 Types

3¼ in. bore, 5 in. stroke, 4 cyl.
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4¼ in. bore, 5 in. stroke, 6 cyl.
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Dept 32
Milwaukee Wis.

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NO GEARS TO SHIFT

The Starter that works directly on the flywheel, eliminating all the intermediate mechanism commonly associated with engine starters.

The pinion on the armature shaft engages the flywheel gear when the switch button is pressed, turns it, and slips automatically and silently out of mesh the instant the engine starts.

The RUSHMORE STARTER

Two sizes—"A," for the largest engines; "B," for medium sized engines. The Rushmore Dynamo is as automatic, free from mechanism, and reliable as the starter.

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Plainfield, N. J.

NO RATCHET DRIVE

JUST PRESS A BUTTON

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Swinehart Non-Skid Tires

The one type that makes skidding impossible. Both the initial cost and the repair expense of chains and inevitable wear and tear on the fabric of the casing are avoided, representing more than 30% of total tire costs. Swinehart (Keaton) depression type has four times the wearing surface of any other non-skid, and its traction and non-skid properties last until the tire is worn out. Safe and economical.

The Swinehart Tire & Rubber Co.
AKRON, OHIO

Stewart Speedometer

MAGNETIC TYPE

¶ Approximately 450,000 cars will be built during 1913 and 400,000 of these will be equipped with a magnetic type speedometer—like the Stewart.

THE STEWART SPEEDOMETER FACTORY
1949 Diversey Boulevard Chicago, U. S. A.

Service stations in every important city in the world

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Keep this in mind when you examine these 1913 models.

Models and Prices

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"Built for Permanence" "Guaranteed for Life"

Our 1914 Models

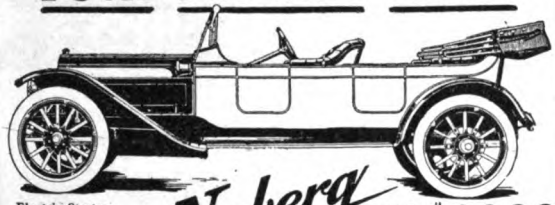
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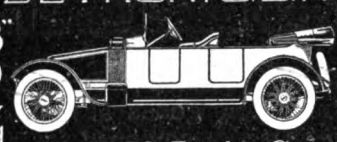
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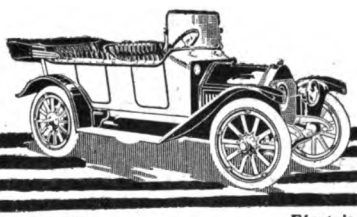
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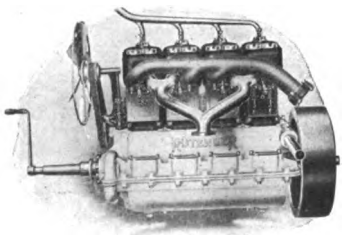
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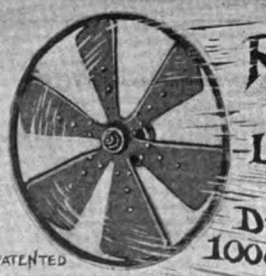
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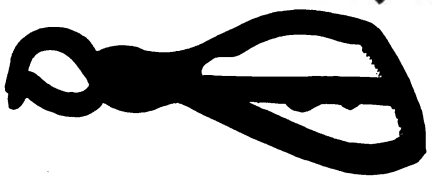
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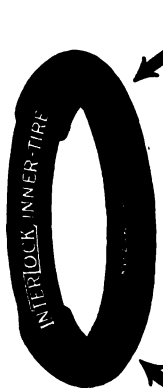
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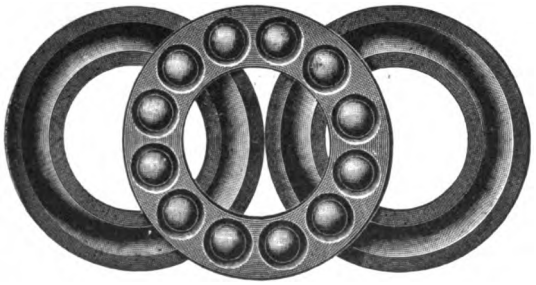
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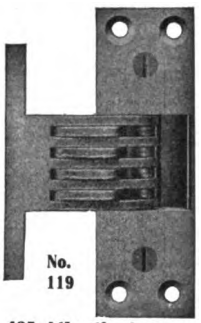
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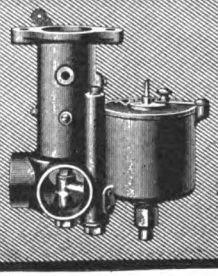
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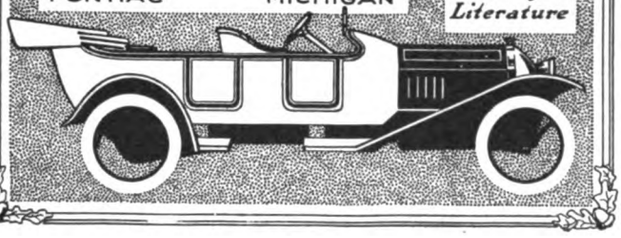
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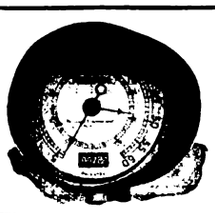
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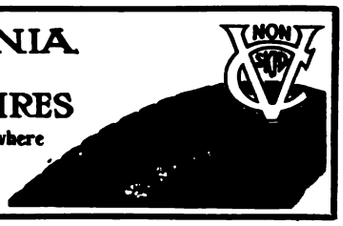
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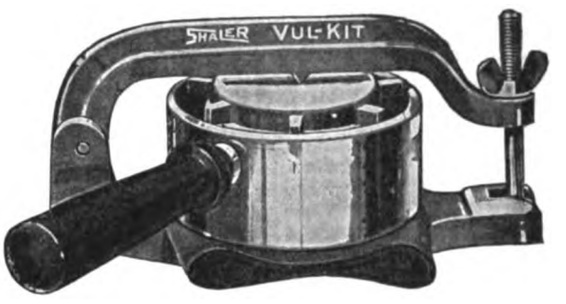
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The Vul-Kit - - - - - - $2.00

SHALER Tire Vulcanizers

There are Shaler Vulcanizers for every requirement, from the $2.00 Vul-Kit for mending a tube puncture now and then, to complete plants for public garages. They are made by the largest exclusive vulcanizer manufacturers in the world, a concern that devoted all of its energy to making reliable tire repair equipment.

An Accessory that Sells Easily

Any motorist can see at a glance how a Shaler will save him time and money; how it will make him independent of the repair shop. It will solve his tire repair problem at very little expense. He doesn't need to be an expert to do the work. Elbert Hubbard says, "A cascaret has nothing on my Shaler."

How to Sell Shalers

Most motorists are familiar with Shaler Vulcanizers in a general way because they have read our advertisements. When they come in and complain about their tire troubles it's up to you to suggest a Shaler as the sure remedy. Dont' wait to be asked. Spring it on your customers. Sell vulcanizers to them with the understanding that it's a "make-good-or-money-back" proposition.

Special Notice to Salesmen:

If you haven't a copy of "Hints to the Busy Salesman" don't fail to write for it at once, stating what concern you are connected with. "Hints" is an interesting little book that will help you sell more accessories for your house. Nearly 5,000 accessory salesmen are carrying it. Get your copy postpaid for the asking.

C. A. SHALER CO., 428 Fourth Street, WAUPUN, WIS.

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For Sale—Wants—Exchange

15 cents per line of six words, cash with order
— In capitals, 25 cents per line —

A market place where Dealers, Jobbers and Manufacturers may buy, sell or trade used cars, parts and appliances and where help or situations may be secured at a nominal cost.

FOR SALE—Garage. Opportunity for two live young men with $15,000 capital. $600 net profit monthly guaranteed. For particulars, STEVENS, 1337 Clinton Ave., New York.

1913 Lozier seven-passenger Big Six, with self-starter and full equipment. Car is practically brand new and has new tires all around. Price $3,600. ARCHAMBAULT MOTOR SALES COMPANY, 197 Ogden Ave., Milwaukee, Wis.

WANTED—Automobile in exchange for $1,500 equity in private house, detached; eight rooms and bath; 40 x 108.4; large chicken house, small garage, etc.; one-half block to school; three blocks to water; mortgage $3,750. What have you to offer? CHARLES HAVILAND, inquire Mitchell House, Bay 19th St. Station, Bath Beach, N. Y.

SALESMAN WANTED — Experienced electric automobile salesman. Give experience, salary expected and references. Box 261, care of Motor World.

BARGAINS, BARGAINS, BARGAINS
One Studebaker electric, 1911, new exide batteries, a genuine bargain at $350.00. One Lambert roadster, four cyl., 30 H.P., tires and car in good running order, $250.00. Cars are worth several times the price but need cash and will sacrifice. AMERICAN AUTO SALES CO., Oshkosh, Wis. Dept. W.

ECONOMY Underground Storage Tanks Pumps, capacity one to six barrels. Top quality, bottom price. ECONOMY GAS MACHINE CO., Manufacturers, Rochester, N. Y.

BROKEN CRANKSHAFTS, cylinders, crankcases, flywheels, gear teeth, pistons, perfectly welded and machined ready to replace. Guaranteed and references. Machinery up to 5 tons welded. ATLAS WELDING WORKS, 74-76-78 Irving St., Rahway, N. J.

TEN acres and lot near St. Louis for auto runabout. WHELAN & CLUXTON, 6602 S. Halsted St., Chicago, Ill.

PEERLESS BACK AND CUSHION DRESSING.
For leather seats and cushions. Dries hard on clean leather. The color does not come off. Renews the finish. Ask your dealer.
THE COLUMBUS VARNISH CO.,
Columbus, Ohio.

WANTED—Four-cylinder 40 H.P. light weight motor minus magneto and carburetter and suitable for speed boat. Address, giving rock bottom price. MACK, care Motor World.

AUTOMOBILE CYLINDERS reground, new pistons and rings fitted. Garage air compressors. CAST IRON BRAZING CO., Manchester, N. H.

COMPLETE list New York State registration, 50 cents per thousand names. OWNERS, AUTO LIST CO., Albany, N. Y.

THE inside of my automobile top was faded, water and grease stained, and looked bad until I used PEERLESS LINING DYE. Then I had a black lining that was soft and pliable. THE COLUMBUS VARNISH CO., Columbus, Ohio.

PARTNER WANTED with some money to open automobile repair business in splendid automobile town of thirty thousand; excellent opportunity to make some money. I am good mechanic with twelve years' automobile experience. Address D. G. BOWMAN, Tulsa, Okla.

WANTED—Late model automobile for my $1,500 equity in 20 acre Michigan grape vineyard and fruit farm. HOUSER, 551 E. 34th Pl., Chicago, Ill.

An ad. like this will cost you $1.05 for each insertion.

These columns offer you an opportunity to appeal to an audience of 8,000 readers whose merchandising taste is being cultivated

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For Sale—Wants—Exchange

15 cents per line of six words, cash with order: — In capitals, 25 cents per line —

A market place where Dealers, Jobbers and Manufacturers may buy, sell or trade used cars, parts and appliances and where help or situations may be secured at a nominal cost.

AUTOMOBILES AND PARTS—Largest stock ever known. Prices on anything. PROGRESS BROKERAGE CO., 527 Grant St., Buffalo, N. Y.

A PRESERVER of mohair automobile tops. Puts new body, color and life into worn out mohair. Makes old mohair look like new. PEERLESS AUTO TOP DRESSING also waterproofs leaking tops. THE COLUMBUS VARNISH CO., Columbus, Ohio.

I MADE an old leather top, whose finish was dead, better than new leather. It was soft and the finish lasted, by using PEERLESS LEATHER TOP DRESSING for black leather only. THE COLUMBUS VARNISH CO., Columbus, Ohio.

FOR SALE—One of the largest and best equipped garages in New Jersey, doing a large repair and storage business, also a big hacking and trucking business. Fully equipped shop. This is a bargain for a hustler; it is now making big money; terms easy. Box 260, care Motor World.

ARE YOU in need of any additional help in any department of your business? Are you out of employment or looking for a better connection? Have you second-hand apparatus of any kind or do you want to buy second-hand material? Have you a factory site for sale or do you want to buy one? If so, use the Want and For Sale column of the Motor World. Seven words to the line, fifteen cents a line. Advertisements can be inserted over a number when it is desired and identity of the advertiser will be kept confidential.

MAILING LISTS AND STATISTICS
Owners or dealers; any state, county, city; weekly and monthly supplements at lowest prices. Special lists of Electrics, Trucks, Fords, Studebaker, Overland, etc.
MOTOR LIST CO. OF AMERICA,
230 News Arcade, Des Moines, Iowa.

SACRIFICE SALE—62nd St., near Ave. N, Brooklyn, N. Y. — $4,250. — Eight model one-family homes, taken under foreclosure, building on plots 27 x 100; containing 8 rooms, tile bath, hardwood trim, steam heat, electric lights, parquet floors; richly decorated, with laundry in cellar; built to sell at $5,500; are offered at $4,250, being less than cost of construction, on easy terms. Will take automobile as part payment. To reach property take Culver line to Ave. N station. L. W. PEASE, 2370 62nd St.; 'phone 7226 Main.

FOR SALE—Packard seven passenger 1908 with limousine and touring bodies, excellent condition; reasonable price for quick sale; can be seen mornings 9 to 11. Apply W. H. BOETTER, Treasurer Ernst Tosetti Brewing Co., Cor. 40th and Butler, Chicago, Ill., or telephone Yards 5191 for appointment.

WILL maintain your car for $5.00 per month. Gasolene or electric automobiles. V. G. PHILBRICK, 2415 Michigan Ave., Chicago, Ill.

FOR SALE—Automobile; Chalmers forty roadster, with double rumble seat; just overhauled and repainted; good condition. 1148 Pierce Building; 'phone Olive 1622; St. Louis, Mo.

KEROSENE FOR AUTOMOBILES.
New Model B uses successfully half and half mixture lowest grades kerosene and gasolene. Satisfaction guaranteed or money refunded. Greatly increased power, very slow speed on high. Starts easy at zero. Special agents' prices. Dept. MW, THE AIR-FRICTION CARBURETOR CO., Dayton, Ohio.

WANTED—A mechanic with some capital to take working interest in Garage and sales agency. Fine location, well established. Address A. J. K., care Motor World.

weekly to the highest degree by our articles on "Wide Awake Merchandising." Look at the cost as shown in the margins.

An ad. like this will cost you $1.20 for each insertion.

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Vitalized Rubber calls a halt on "Short Mileage!"



At last science gives you more rubber-shod mileage

Diamond (No Clinch) Tires

now made of VITALIZED RUBBER —a new process of toughening pure rubber



Cross Section Diamond (No-Clinch) Tire

You get Vitalized Rubber in Diamond Tires---NOW

A tire made of pure rubber only would fail to give the necessary mileage because it would not be *tough* enough to withstand road usage. And a tire containing too little pure rubber would not have the necessary staying qualities.

Our chemists have discovered how to scientifically toughen pure rubber by a new process. The result is additional mileage for you. The pure rubber we use comes direct from the trees of the tropics—it is fresh and contains all the vitality of youth —it is elastic and easy riding. Then we toughen this pure rubber so as to give it the necessary vitalizing, wearing, *more mil age* quality.

This scientific process has been vainly sought after for years by tire makers. After 15 years of successful tire making we have solved the problem—and you enjoy the benefit of our really wonderful discovery in "Diamond" Vitalized Rubber Tires.

Add to this the Diamond proven principles of proper construction—nothing inferior in rubber, fabric or workmanship—and you have as perfect a tire as money can buy.

Here is a combination of easy riding and more mileage advantages you can't get in any other tire today—*Vitalized Rubber, Perfect 3 Point Rim Contact, No-Pinch Safety Flap* for inner tube protection, and, if you wish, the now famous Safety (Squeegee) Tread—made to fit all types of rims.

So this time buy Diamond Vitalized Rubber Tires---you can get them to fit your rims from

Diamond Dealers Everywhere

A Perfect 3-Point Rim Contact Tire at last

Diamond 3-Point Contact Tires hold with a vise-like grip, absolutely preventing the tire from breaking above the rim, insuring no rim skid—no rim trouble at all. Our engineers have mastered the principles of Rim Contact construction, and you can now get the Diamond (No-Clinch) Tire, with a Perfect 3-Point Rim Contact—an important advantage that has heretofore been overlooked.

No-Pinch Safety Flap absolutely protects the inner tube

The No-Pinch Safety Flap that comes in every Diamond (No-Clinch) Tire will reduce your inner tube bills—because it forms a substantial wall separation between the inner tube and the rim, making it impossible for the inner tube to be pinched or cut under the rim, or injured by rim rust.

This No-Pinch Safety Flap is made of the best grade of fabric, and is finished with a "Feather Edge" as a further protection against inner tube cutting.

There is no rubber in this flap to adhere or vulcanize, so that the inner tube can be quickly and easily removed at all times—another big Diamond advantage.

Diamond Safety (Squeegee) Tread for Automobiles, Motorcycles and Bicycles

Be a Diamond Dealer

If you are not a Diamond Dealer, now is the time to get in line. There is a Diamond Branch near you—get in touch today.

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American Museum of Safety favors Standard Warning Signal

From an article in the Scientific American Supplement of April 13th, by Frederic Remsen Hutton, Vice-Pres. American Museum of Safety, Vice-President American Society of Mechanical Engineers, Chairman of Technical Committee, Automobile Club of America.

"A WARNING SIGNAL must not only impress sound waves on the drum of the ear, but it must reach the mind behind the ear and cause volitional action. The signal should carry its alarm notice over the distance of at least one block, to even a deaf or slow-moving person, against the wind and other noise of the street.

"The warning signal should be of the quality not attaching to any other street noise and it should be audible from such a distance that the person warned should not jump with a nervous movement to avoid something that seems at his side before he knew it was anywhere near him. To sound the signal unnecessarily not only makes the street more noisy than necessary, but also it breeds the habit of disregarding the signal when it is full of real meaning.

"A true musical note is not as serviceable for arousing attention or for warning. The short explosive note of the diaphragm types of signal, where a steel diaphragm is set vibrating by an electric motor, makes the first sound waves as effective as those which leave the signal later, and this is its best claim to be a safety device, in the sense that the American Museum of Safety uses that term.

"The common pneumatic reed actuated from a hand-bulb cannot be heard in noisy traffic or against strong winds for any considerable distance, or even a city block, and is scarcely, therefore, entitled to be classed among safety devices, in the Museum sense."



KLAXONET

Lovell-McConnell Mfg Company Newark, N.J., U.S.A.

KLAXON

"The Public Safety Signal"



KLAXON

This advertisement set in "Klaxon" type especially designed by F. W. Goudy.

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PACKARD SERVICE

The car best able to care for itself is cared for by the best service

Packard service means ability plus willingness to serve. Every Packard owner commands free of charge the services of a technical expert in inspecting his car and making minor adjustments. Packard dealers take the initiative in keeping cars running to the entire satisfaction of their owners.

Each dealer carries a carefully selected line of parts in stock and maintains a service department with all facilities for keeping Packard cars and trucks at their high point of efficiency.

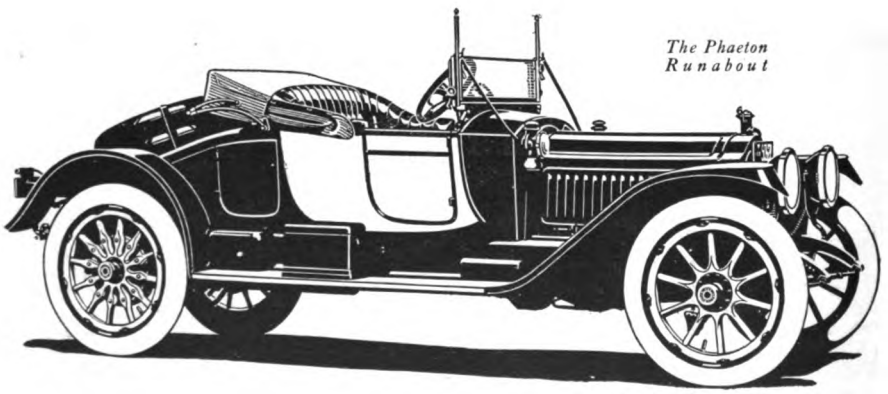
For Packard owners who tour abroad, the Packard Motor Car Company of Paris maintains a complete service depot at No. 5 Rue Newton, Paris.

In all Packard establishments the same consideration is extended to every Packard owner regardless of his place of residence or where he purchased the car.

Packard service follows the car:—one of the reasons why a Packard bought this year will have a higher relative cash value next year or five years hence than any other car purchased at the same time.

Ask the man who owns one

Packard Motor Car Company, Detroit



The Phaeton Runabout

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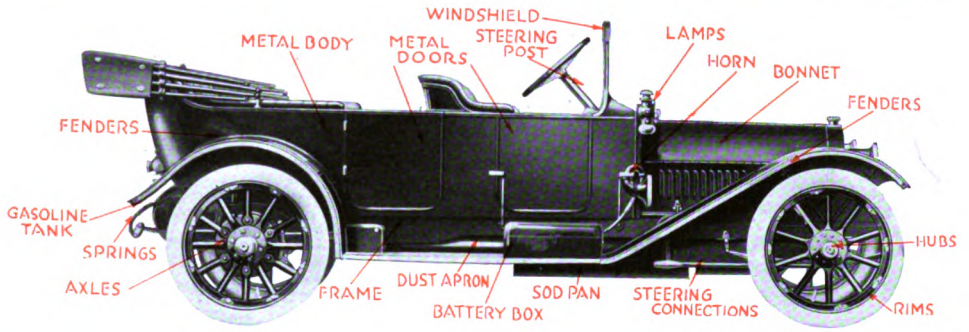
MOTOR WORLD

A Trade Paper Giving the World's Motor News

Vol. XXXVI
No. 5

New York, July 24, 1913

Ten cents a copy
Two dollars a year



For All Metal Automobile Parts Use "Lionoil"—the Perfect Rust Preventive

Rust is the great enemy of metal. Berry Brothers' "Lionoil" is the greatest enemy of rust.

Prudent manufacturers of bodies, springs, frames, axles, fenders, lamps and all sorts of metal stampings and forgings are finding "Lionoil" indispensable as a rust preventive.

A coat of "Lionoil" on metal parts means a smooth, clean surface for painting and finishing.

On parts that have to be stored, a coat of "Lionoil" means absolute protection against weather or dampness in the stock room.

Metal parts coated with "Lionoil" when finished, will show no tendency to peel, check or flake.

"Lionoil" air-dries quickly, spreads over a great deal of surface, is economical to buy. It pays for itself in labor saved and metal preserved.

Let us send you full information regarding "Lionoil."

We also make the Raven line of black Japans for lamps, bonnets, top bows and other parts.

Let our Technical Department help you with your finishing problems. Write for booklet and full information.

BERRY BROTHERS' VARNISHES DETROIT

55 Years' Experience

Established 1858

BERRY BROTHERS

Largest Manufacturers of Varnishes and Japans in the World

Factories: Detroit, Mich., and Walkerville, Ont.

Branches: New York, Boston, Philadelphia, Baltimore, Chicago, Cincinnati, St. Louis, San Francisco, London, England.

LIONOIL

No matter which way you spell it,—fowards or backwards, up or down, it is still the worlds greatest rust preventive.

Published Weekly by the Motor World Publishing Company, 1600 Broadway, New York

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New Truffault-Hartford Shock Absorber has Three Degrees of Friction

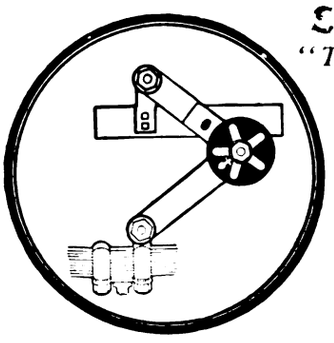
Frictional absorption, as first and only employed in the famous Truffault-Hartford Shock Absorber, has been assigned a new application in the New Automatic—the latest Truffault-Hartford model and the last word in scientific shock absorption.

This new model combines *three* distinct degrees of frictional tension, varying in intensity according to the condition of the road surface.

These three degrees are positively automatic, responding so quickly and perfectly to a change in the road surface that the car rides with equally luxurious ease on all roads—rough or smooth.

The first degree of tension, while extremely slight, suffices to destroy the disagreeable spring oscillation generally quite evident in travelling over a smooth road surface at high speed.

A change in the road from smooth to moderately rough, brings the second degree of tension into action and this, while thoroughly successful in preventing any excess action of the springs, does not affect their necessary full range of play.



The third degree serves the dual function of not only insuring the comfort of the car's passengers on abnormally rough roads, but in acting as a sure and effective control for the springs in case of sudden and speedy contact with car tracks, deep ruts, or high bumps frequently seen too late to slow the car down.

The increased comfort which the New Automatic makes possible in the automobile is the nearest approach to riding in a Pullman car over a rock-ballasted railway that the motoring world has ever been offered.

Regardless of its spring equipment—stiff, medium or highly flexible—every car is benefited and made to ride all roads with remarkable ease through the addition of the

Truffault-Hartford
SHOCK ABSORBER
"The Pioneer Shock Absorber"

Unlike many other devices the New Automatic is attached without detriment to the car's appearance. Write for catalogue giving complete information of this and other models.

Insist Upon Truffault-Hartfords on Your New Car

HARTFORD SUSPENSION CO.

EDWARD V. HARTFORD, Pres. **Office and Works: 142 Bay Street, Jersey City, N. J.**

Manufacturers of Hartford Electric Starting and Lighting System

BRANCHES

New York—1700 Broadway
New York—212-214 West 88th St.
Boston—319-325 Columbus Ave.
Chicago—1458 Michigan Ave.
Philadelphia—1437 Vine St.
Newark—289 Halsey St.
Jersey City—141-143 Morgan St.
Kansas City—1524 Grand Ave.
Detroit—803 Woodward Ave.
Indianapolis—448 No. Capitol Blvd.

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The Significance of
The Latest Firestone Victory

That supreme record test at Indianapolis last Decoration Day, when two nations rode to triumph on Firestone Tires, means far more than confirmation of Firestone leadership.

It proves that endurance can be built into a tire equal to any strain which conditions may bring out. It justifies, also, a world-wide challenge for American ideals of workmanship and quality.

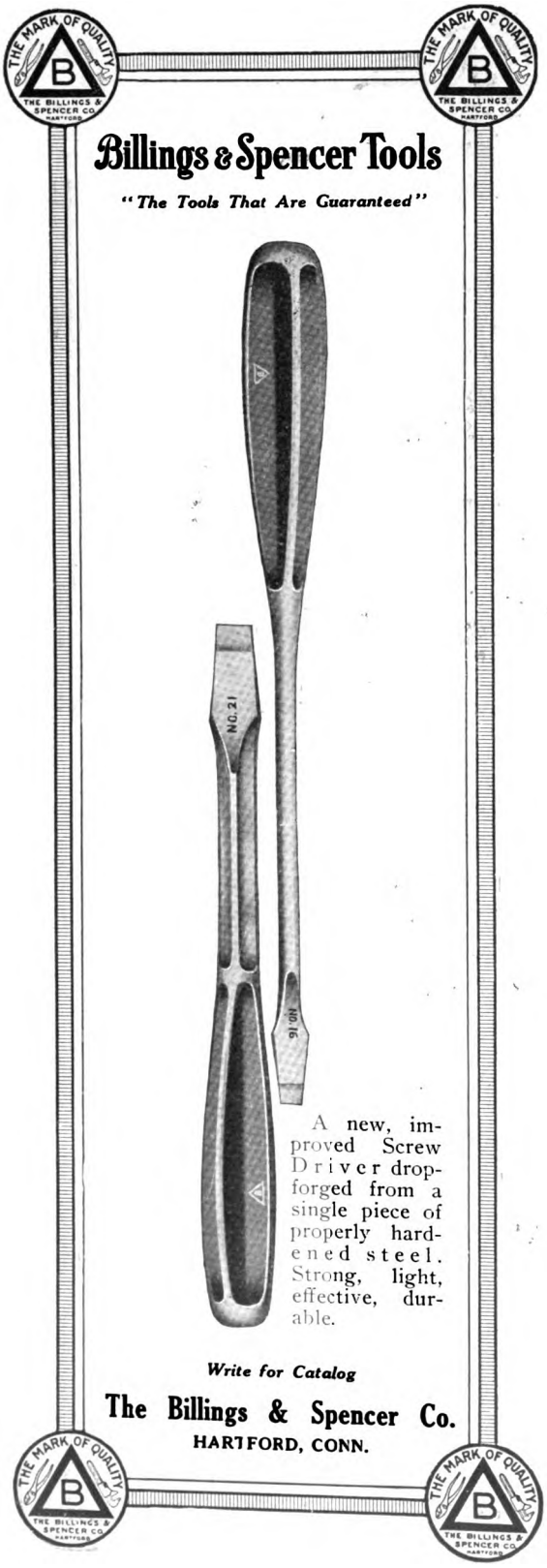
And It Offers a Final Infallible Guide in Tire Selection

The Firestone Tire and Rubber Co., Akron, O.—All Large Cities

"America's Largest Exclusive Tire and Rim Makers"

Firestone
NON-SKID TIRES

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2 minus 1 leaves 1, and that is what causes carbon.

1 minus 1 leaves 0, or nothing, and as there is nothing left it cannot collect carbon.

The above is the whole story of the success of MONOGRAM OIL and can be simply explained by saying that practically all other automobile oils are made up of a compound of one very light finished oil and one very heavy finished oil to give the required "body" or viscosity. Neither of them alone would be suitable for the lubrication of the average automobile engine, and when this compounded oil comes in contact with the heat of the explosion in the cylinder, the light weight oil flashes and burns off quickly, leaving the very heavy oil to gum and to collect the road dust which is drawn in through the carburetor and they both bake on the cylinder walls, piston heads, and valves, causing carbon deposits.

On the other hand MONOGRAM OIL is what is known as a "straight run product." That is, the required "body," or viscosity, is obtained in the stills during its course of manufacture, and when this oil comes in contact with the explosion heat it burns or vaporizes off evenly—for the oil is **all** just the same through and through and when it is burned there is nothing left to collect the dust and to form carbon.

This is why MONOGRAM OIL has been continually successful under that one brand name since the very start of the automobile industry.

New York Lubricating Oil Co.

Consolidated with
COLUMBIA LUBRICANTS CO. OF N. Y.
118 Broad Street, New York City.

BRANCHES AT NEWARK, BOSTON, CHICAGO, CLEVELAND, PHILADELPHIA, SAN FRANCISCO, LOS ANGELES, SEATTLE, SPOKANE, LONDON, ENG.; JOHANNESBURG, SO. AFRICA.

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Overland

The road to sales efficiency

THE fundamentals which make for practical and economical sales efficiency are saleable product—plus a complete and comprehensive organization—plus broad and effective sales, merchandising and advertising methods. The Willys-Overland Company have, beyond doubt, the most complete organization in the industry—and for 1914 it will be made larger.

The Willys-Overland Company conduct the largest and most effective advertising campaign in the industry—and for 1914 it will be made larger.

The Willys-Overland Company have, from year to year, marketed the most saleable and most non-competitive car in the industry—and our 1914 value will be even more unusual in its features and its price than ever before.

The dealer who waits and connects with this 1914 line-up will establish a business and build for himself a future that is profitable, and which is free from the annoyances and disappointments caused by the natural drawbacks of handling a non-staple line.

We announce August sixteenth.

Wait.

The Willys-Overland Company
Toledo, Ohio

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MOTOR WORLD

Vol. XXXVI New York, U. S. A., Thursday, July 24, 1913 No. 5

J. N. GUNN RELINQUISHES STUDEBAKER MANAGEMENT

His Mission Accomplished, He Returns to His Former Business but Remains a Director — C. H. Booth His Successor.

Having accomplished the purposes he had in view, James Newton Gunn, general manager of the Studebaker Corporation, tendered his resignation at a meeting of the directors held in New York last week. It was accepted but, at the solicitation of the directors, Gunn will remain a member of the board.

The vacancy created by Gunn's resignation was filled by the promotion of Clarence H. Booth, former assistant general manager, who thereby becomes head of the Studebaker automobile division. Booth has been connected with the Studebaker establishment for many years and has served in so many departments that he is familiar with the entire structure.

Gunn was elected a director and general manager of the entire Studebaker Corporation in April of last year, at about the time Walter E. Flanders was preparing to relinquish the management of the automobile division and when his preparations had caused an interesting if not delicate situation.

Gunn is a member of Gunn, Richards & Co., who are efficiency engineers and accountants, and, although he previously had performed special work for the Studebaker Corporation, his entry into it as general manager was wholly unforeshadowed and wholly unexpected.

Gunn was practically unknown to the automobile industry, but after Flanders retired and the kinks had been smoothed out he quickly proved himself a general manager in fact as well as in name. He generally reorganized the Studebaker affairs and restored the esprit de corps, which had been sadly shattered. He built up what amounted to practically a new staff, and although he rarely figured in print, and never posed in the limelight, one of his chief assistants only recently indicated the regard in which he was held by describing him as "one of the most lovable men I have ever known."

Gunn retired from the Studebaker service in order that he may devote more time to Gunn, Richards & Co., who number not a few important clients and whose business is extensive.

Gleason-Peters Takes up Carburetters.

Hereafter the manufacture of carburetters will be combined with the manufacture of air pumps by the Gleason-Peters Air Pump Co., of Brooklyn, N. Y., that well-known company having purchased the business of the Motor Appliance Co. of America, which produced the Maco carburetter. The manufacture of the carburetter already has been taken up at the Gleason-Peters plant at 255 Classon avenue. In the construction of the Maco carburetter there are but two adjustments—one for the gasolene for low speed and one for the air for high speed—and the venturi tube is placed so that a strong vacuum always acts upon it and the fuel therefore is well atomized. The spray nozzle is placed directly in the center of the float chamber so that constant fuel level regardless of the position of the engine is assured. Several styles are made for attachment either from the top or from the side.

The needle valve adjustment is at the top, and the point of the needle, being inserted in the top of the spray nozzle, spreads the gasolene as it is drawn from the nozzle.

Smith Ceases Manufacture of Clutches.

Because of the necessity for more space for the manufacture of its frames and other pressed steel parts, the A. O. Smith Co., of Milwaukee, has transferred the manufacture of the Smith-Mulford disk clutch to the Universal Machinery Co., of Milwaukee. In making the announcement, the Smith company adds that their arrangements are such that the Universal people will produce the clutch under Smith supervision.

BIDWELL, HIS LEAGUE, AND TIRE COMPANY IN A SNARL

His Former Colleagues Accuse Him of Many Offenses—He Goes to Canada and Dodges Appearance in Court in Buffalo.

Alfred C. Bidwell, the one-time Buffalo wall paper hanger who formed the so-called International Automobile League, is among the many whose exact whereabouts is not now known. He is believed to be in Canada; at any rate, he is not in Buffalo, where at least some of his former colleagues are wearing mourning bands as proof of their sorrow which followed close acquaintance with him.

As it is not yet a matter of court record, all that they say of Bidwell cannot be put into print. Most of it forms the basis of an extended communication to the stockholders of the Northland Rubber Co., which was an outgrowth of Bidwell's "league," and if even half of it is true, the wonder is that he has been permitted to go scot free for such a length of time.

The communication makes evident that the "league" and the Northland Rubber Co. have been internally upheaved for many months, and it is alleged that more than a year ago an order for Bidwell's arrest was secured. That difficulty apparently was patched up for it was not until yesterday, 23rd inst., that the matter got into open court.

Yesterday's proceedings took the form of arguments before Justice Laughlin, in the Supreme Court, in Buffalo, on an application of the Northland Rubber Co. for an injunction to restrain Bidwell from circularizing the stockholders of the International Automobile League in an alleged attempt to injure the business of the company. It is charged that Bidwell, calling himself a grievance committee of the league, is sending thousands of circulars from points in Canada in efforts to weaken

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the standing of the rubber company and its officials.

George C. Riley appeared for the rubber company and Henry W. Killeen for Bidwell, who is admitted to be in Canada, dodging service of an order of arrest secured by James Bendure, consulting engineer of the Northland Rubber Co., in a libel action he has started against Bidwell, whom he charges with attacking his professional reputation. Incidentally, Bendure has secured an attachment tying up $5,913.24 to the credit of Bidwell in the Commonwealth Trust Company.

While the heated debate between Attorneys Killeen and Riley was in progress before Justice Laughlin, Daniel V. Murphy appeared for a stockholder of the International Automobile League, whereupon Riley declared that Murphy had been injected into the case at the last moment merely for the purpose of delay. Murphy emphatically denied the assertion and Justice Laughlin granted his request and adjourned the hearing until Friday morning.

"Why don't you produce Bidwell," asked the court of Attorney Killeen.

"Yes, produce him, and have numerous orders of arrest served," returned the attorney. "I intended to advise him to come to Buffalo, but not knowing how many orders of arrest the Northland Rubber Co. has up its sleeve, it was deemed best for him to stay where he is for the present."

"Oh, I'll stipulate that we have only one order of arrest," responded Riley. "That is, one in our action charging him with violation of contract."

Mr. Riley read affidavits in which he charged that Bidwell knew that injunction proceedings were on, and claimed that he had dodged service of papers in the action while he was at the Elks' convention at Rochester, N. Y., last week; that he had been located later at Niagara Falls, Ont., and that he is having literature printed on the American side of the border and is directing its distribution in an attack on the Rubber company.

Bidwell himself became a bete noir of the automobile trade soon after his so-called "league" was organized. For cutting prices, violating patents, counterfeiting accessories and selling doubtful goods he was repeatedly taken into court, but little things like these did not greatly worry him, for almost invariably he broke out again in some new place, or in the old place, meanwhile painting vivid word pictures which attracted "members" to his "league," and threatening to sue those who dropped out, most of whom failed to notice that the "membership blank" they signed bound them for life, unless they gave 60 days' notice of their intention not to renew their "memberships."

Bidwell made so much easy money by these practices—even 10,000 members at $10 each equals $100,000 per year—that the spirit of frenzied finance seized him and, reaching out for millions, he overreached himself. One of his first steps in that direction was the formation of the International Automobile League Tire & Rubber Co., capitalized at $2,000,000, and just as he graciously permitted his "members" to pay for the privilege of buying his goods, he allowed them to purchase stock in his tire company. It is stated that between 8,000 and 9,000 of them accepted the rare privilege.

Things apparently were coming so easily that Bidwell went first to Canada, where he formed the League of Canadian Automobilists, and later to California, where the Western I. A. L. Purchasing Corporation was organized, both of which seemingly assisted the sale of shares in the tire company.

Almost from the beginning of his career, Motor World repeatedly threw light on the man and his methods and when, in March last, the International Automobile League Tire & Rubber Co. suddenly changed its name to the Northland Rubber Co., and it was discovered that Bidwell had retired from the presidency, the suspicion was formed that "something had happened." Bert L. Jones, who is general manager of the Niagara Gorge Route, succeeded Bidwell as president of the tire company, but when seen by a Motor World man at that time he stated that the change of name was due to the fact that it "conflicted with the League's title," and also because it "simplified matters." He asserted positively that there was no connection between the Northland company and the so-called League except to the extent that Northland tires were sold to the League, but not at special prices.

As a matter of fact, the various practices of which Bidwell is now accused must have been well known to Jones, a committee of stockholders having been appointed more than a year previously to investigate the affairs of the Tire & Rubber company, after Bidwell had refused to give information or to explain why no effort had been made to erect the projected tire factory. It now develops that at the outset Bidwell or his "league" took 51 per cent. of the Tire company's stock under a collusion contract to pay $100,000 therefor, and the manner in which he made use of this stock appears to be the foundation of all the trouble and accusations which followed and which are now in a fair way of being threshed out in court.

Fry Back, Ready to Push Wire Wheels.

Having completed negotiations whereby the Dunlop Wire Wheel Corporation of America, organized in April with 400,000 capital, is to manufacture Dunlop wire wheels in America, Walter L. Fry, president of the new company, returned last week from England, and the American Dunlop corporation expects to be able to fill orders by October 1; Fry's trip to England also included a study of the manufacture of Dunlop wheels in that country in which he was joined by two technical men who probably will be connected with the company which Fry heads.

Arrangements for manufacturing have progressed so far that a factory in New York City has been practically secured, although the location has not yet been made public because certain details have not been consummated.

It will operate more or less indirectly as a licensee of the Rudge-Whitworth company of England, and the exact manner was made plain by Fry upon his return; the Dunlop and Rudge-Whitmorth companies engaged in litigation several years ago which terminated in the English Dunlop company taking out a license under the patents controlled by Rudge-Whitworth. This license permitted the Dunlop company also to enter the American trade and it is now doing this, being heavily interested in the new American Dunlop company.

Studebaker Discontinues More Branches.

The Seattle, Fargo and Washington branches of the Studebaker Corporation have been discontinued. The Seattle territory has been taken over by the Portland branch and the Fargo territory by the Minneapolis branch.

Notes Bring Down a Thomas Relic.

The Thomas Motor Co. of New York, which purchased most of the stock of the E. R. Thomas Motor Car Co., of Buffalo, when it was sold by the receiver in April last, through Adolph Rebadow, filed a voluntary petition in bankruptcy in the Federal court in Buffalo on Tuesday last, 15th inst.

The petition states that the assets are $20,727.76 and the liabilities at $351,211.17. Practically all of the latter consist of two notes payable to Adolph Rebadow and George C. Finley, receivers of the E. R. Thomas Motor Co., for $280,759.01 and $18,896.17, respectively. These notes proved too much of an obstacle to be overcome by the Thomas Motor Co., which, capitalized at $100,000, was formed to sell the Thomas product, although comparatively few were aware of its existence.

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FLANDERS ELECTRIC ABOUT TO BECOME "TIFFANYIZED"

Pelletier Aids in Organization of Tiffany Company—Purchases Bankrupt's Machinery but Not Factory.

What was the Flanders electric car is about to become the Tiffany Mignon, made by the Tiffany Electric Car Co., the Flanders machinery and stock having been purchased by E. LeRoy Pelletier and several associates, who have organized the Tiffany company to continue its manufacture under the new name. In addition there will also be made a larger and more expensive car—one in the $3,000 class—which will be styled the Tiffany DeLuxe.

Soon after the failure of the Flanders Mfg. Co., of Pontiac, Mich., in December last, rumors were afloat that Pelletier had his eyes on the electric end of the business, but when he made no bid for it when the Flanders machinery and stock on hand were sold to Harris Bros & Co., the Chicago house wreckers, it was taken for granted that he had abandoned any intentions of the sort he might have possessed. Late last week, however, he purchased the property from the Harrises and proceeded to the formation of the Tiffany Electric Car Co., which probably will be incorporated with an authorized capital of $500,000 and with Pelletier as its president. Its general manager will be Don C. McCord, one-time general manager of the Flanders Mfg. Co., in whose affairs Pelletier himself was quite active. His new enterprise, however, will not interfere with Pelletier's present connection with the Maxwell Motor Co.

The Tiffany interests have not acquired any of the Flanders real estate or factory buildings, on which the Harrises obtained a three months' option. As a matter of fact, the option has been set aside by the court and within six weeks all of the land and buildings will be offered at public auction by the receiver, the Detroit Trust Co.

Rajah and Grossman Again Lock Horns.

Although the Rajah Auto Supply Co., of Bloomfield, N. J., secured an injunction early last year in the United States District Court for the Southern District of New York restraining the Emil Grossman Co., of New York City, from infringing the Rajah spark plug patent, No. 825,856, the Rajah company has deemed it necessary to sue again and filed its action this week in the same court.

The first suit was based upon the manufacture of a completed plug, the Grossman company making the "Red Head" brand, and after the injunction was secured the Rajah company claimed the Grossman company was guilty of contempt of court in marketing a removable porcelain to fit Rajah plugs; it instituted contempt proceedings, but lost out even on an appeal to the United States Circuit Court, the Grossman company contending that it had not intended its porcelains for Rajah plugs.

The present suit alleges infringement of the same patent by the making and selling of the porcelains, which are claimed to be a part of the Rajah patent.

Wisconsin Dealers Form Association.

Growing out of an informal meeting held in Sheboygan several weeks ago, the automobile dealers in the northeastern part of Wisconsin last week organized the Northeast Wisconsin Automobile Dealers' Association, at least 10 cities and towns being represented in the membership. Officers were chosen as follows: Dr. J. A. Crum, president; Charles F. Kade, Sheboygan, first vice-president; F. S. Hoaglin, Oshkosh, second vice-president; F. A. Thom, Oshkosh, secretary; W. C. Van Nelson, Waupaca, treasurer; M. St. John, Green Bay, and F. Mitchell, Fond du Lac, directors. Among other plans, it is the intention of the association to promote an annual show, which will be held successively in each of the more prominent cities represented by the membership.

Universal Salesman Awarded Commissions.

Having secured a verdict of $1,124.18 in the New York City Court against the Universal Motor Truck Co., March 6 of this year, George W. Kayton, a former salesman for that company, seems in a fair way of getting the money; twice beaten in court, the Universal company this week was denied a new trial, although it contended it had discovered collusion between Kayton and his witnesses. Kayton demanded $1,030 as unpaid commissions on the sale of ten trucks to the Commercial Delivery Co., of New York City, which payment was refused on the grounds that the delivery company failed to take the trucks. Kayton contended that this was not his fault.

Lamb Organizes Another Truck Company.

Frank E. Lamb, of Lima, Ohio, who at one time was connected with the Gramm Motor Car Co., has organized the National Motor Truck & Mfg. Co., in Gibsonburg, O., of which he has been elected president and general manager. The other officers are: A. T. Crossett, first vice-president; C. H. Hutchison, second vice-president; John O'Leary, secretary; J. A. Nieset, treasurer. The company is capitalized at $250,000 and will manufacture trucks of 1 and 2½ tons capacity.

WEED ENTERS MANUFACTURE OF TIRE BLOW-OUT REPAIR

Secures Rights Under Patent it Helped Secure for Los Angeles Inventor—Device Utilizes Patch and Mesh of Weed Cross Chains.

Having secured exclusive rights, the Weed Chain Tire Grip Co. is about to market a chain-retained blow-out repair, which is the invention of Timothy C. Dobbins, a Los Angeles inventor; the device consists of a patch which is placed between the inner tube and shoe, over the blow-out, and a series of Weed cross chains, about six in number, placed close together and anchored to brackets which attach to the rim at each side. With this mesh-like chain arrangement holding the repair together several miles can be made, it is stated, without difficulty.

Dobbins's affairs have been handled by the Weed attorneys ever since he made his original application for a patent, April 27, 1911. A revised application was filed September 18, 1911, but interference developed with a device patented by one George B. Shriner; the Weed-Dobbins device won out, however, and was allowed June 24, 1913, under the number 1,065,787. It has been patented in foreign countries, including Belgium, Canada, France and Great Britain, and will be made and marketed under a royalty arrangement by the Weed company.

Lozier Discontinues Two More Branches.

Having already disposed of its branches in New York, Boston and San Francisco, the Lozier Motor Co. has carried still further its policy of discontinuing such establishments, the Chicago and Philadelphia houses having already passed out of the company's hands. The latter has been turned over to the Bigelow-Willey Motor Car Co., which was organized for the purpose, while the Lozier agency in Chicago has been given into the hands of the Bird-Sykes Co.

Champion Cars Locate in Minneapolis.

Although it is stated that the Champion Motor Car Co. has acquired a factory at 14th avenue, northeast, and the Northern Pacific tracks, in Minneapolis, and will be in operation by August 1st, for some inexplicable reason the names of the men concerned with the project have not been permitted to escape. The Champion company, or whoever composed it, intends to manufacture a 50-horsepower six-cylinder car at $2,750, and a 36-horsepower "four" listed at $1,800.

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AUTOMOBILE EXPORTS FOR MAY INCREASED $275,000

Total of Cars and Parts, $3,692,700—Gain of 294 per Cent. by Other Countries—Value for Eleven Months $30,816,504.

The exportation of automobiles and allied products during the month of May, 1913, gained by nearly a half million dollars over the exports of the same month of the preceding year, as stated in Motor World of July 3, but statistics which are contained in a more detailed report by the Federal government reveal interesting information as to the destinations of the shipments and the countries which purchased this volume of American products. While cars, parts, engines and tires gained $474,575, cars and parts constitute considerably more than half this increase, the gain in value of these products being $275,108, or 7 per cent. Cars shipped to foreign countries and the non-contiguous American possessions advanced 13 in number, which is slightly less than 1 per cent.

A substantial increase is recorded for a period of 11 months, ending with May, 1913, as compared with 11 months terminating with May, 1912, the advance amounting to $5,551,613, or 22 per cent., in value and 3,563, or 17 per cent., in number. The total for the latter 11-month period is $30,816,504. Also, the average value of cars exported is $55, or 5 per cent., higher in the past May, the values for the two months being, May, 1912, $984; May, 1913, $1,039.

Of the 12 geographic divisions into which the export statisticians divide the world, Other Countries recorded the greatest gain, advancing 237 cars, or 291 per cent., and $211,845, or 294 per cent. Germany, however, was a good second, with an increase of 143 cars, or 292 per cent., and $109,080, or 297 per cent. Asia and Other Oceania increased its American purchases 130 cars, or 86 per cent., and in value by $122,865, or 82 per cent.

Italy, the United Kingdom, Canada, Mexico and British Oceania entered their names in the loss column, something which Canada has not done in some time, it generally ranking among the leaders in buying American cars. Parts gained $88,539, or 20 per cent. Cars shipped to foreign countries gained 27, or .9 per cent., in number and $191,371, or 6.5 per cent., in value, making the combined monetary increase in cars and parts $279,910, or 8 per cent.

Of the four non-contiguous American possessions, the Philippines was the only one to gain, advancing 29 cars, or 108 per cent., and $34,540, or 85 per cent. Hawaii and Porto Rico lost, the former $2,722, or 4 per cent., the latter $37,972, or 60 per cent. The total for the possessions is a decrease of 14 cars, or 11 per cent., and $4,802, or 2.5 per cent.

The figures for engines and tires for the two Mays were: Engines: 1912, 571, $67,627; 1913, 978, $137,793; gains, 407, or 88 per cent., $70,166, or 103 per cent. Tires: 1912, $272,317; 1913, $396,816; gain, $124,499, or 45 per cent. The figures in detail are shown by the subjoined table.

IMPORTING OF MOTOR CARS CONTINUES DOWNWARD PATH

Value of Cars Bought Abroad by America in May Falls Off 31 per Cent. — Italy Only Gainer, While France Loses.

Imports of foreign made automobiles into the United States during the month of May just passed continued to decrease, and while Motor World previously stated that the value of cars and parts fell off by $46,569, the countries which suffered these losses are enumerated in a more detailed government report. The loss of $46,569 represents a decrease of 25 per cent. The decrease in number was 361, or 45 per cent, and the monetary loss in cars alone, $52,022, or 31 per cent.

The only gain in number and value was made by Italy, which increased its sales in America by 3 cars, or 60 per cent., and $11,040, or 109 per cent. France was the heaviest loser, dropping behind its figures for May, 1912, by 24 cars, or 58 per cent., and $46,450, or 48 per cent. The next heaviest decreases were by the United Kingdom and Other Countries. Parts gained $5,453, or 25 per cent. The figures in detail follow:

	May, 1912. Number.	Values.	May, 1913. Number.	Values.
France	41	$95,965	17	$49,515
Germany	5	10,114	8	21,154
Italy	11	17,424	9	23,615
United Kingdom	11	28,324	3	6,300
Other Countries	8	13,932	5	13,153
Total cars	76	$165,759	42	$113,737
Parts (except tires)	..	21,493	..	26,946
Total cars and parts	76	$187,252	42	$140,683

	May				Eleven Months Ending May					
	1912		1913		1911		1912		1913	
	Quantities.	Values.	Quantities.	Values.	Quantities.	Values.	Quantities.	Values.	Quantities.	Values.
France	63	$48,980	108	$72,149	299	$440,902	507	$419,816	753	$571,049
Germany	49	36,719	192	145,799	87	191,856	261	190,440	692	632,247
Italy	30	35,605	5	12,500	119	172,399	169	157,852	276	247,863
United Kingdom	673	465,722	473	354,686	1,808	1,813,553	5,389	4,231,487	3,593	2,737,438
Other Europe	204	155,125	294	236,447	519	618,693	1,062	870,311	1,601	1,368,654
Canada	1,109	1,352,856	862	1,255,771	4,150	4,400,022	5,533	6,534,088	6,829	8,636,880
Mexico	8	15,370	6	5,110	323	574,656	266	410,129	265	496,981
West Indies and Bermuda	29	36,237	45	47,591	249	323,593	299	318,618	415	430,106
South America	162	183,292	213	248,707	585	740,041	1,444	1,736,921	2,651	2,978,020
British Oceania	445	412,565	234	220,372	1,268	1,082,118	3,479	3,137,612	2,744	2,582,239
Asia and other Oceania	152	149,309	282	272,174	612	650,692	1,001	1,038,677	2,025	1,944,287
Other Countries	85	72,038	322	283,883	230	253,652	406	388,014	1,288	1,196,018
Total cars	3,009	$2,963,818	3,036	$3,155,189	10,249	$11,262,177	19,816	$19,433,965	23,132	$23,821,782
Commercial†	3,009	2,963,818	141	236,383	10,249	11,262,177	19,816	19,433,965	878	1,569,750
Passenger†			2,895	2,918,806					22,254	22,252,032
Parts*	.....	448,972	.....	537,511	.....	2,219,294	.....	3,745,320	.....	4,690,983
Total cars and parts*	3,009	$3,412,790	3,036	$3,692,700	10,249	$13,481,471	19,816	$23,179,285	23,132	$28,512,765
To American Possessions—										
Hawaii—Cars	42	66,751	33	64,029	343	671,330	452	781,760	664	1,111,753
Parts*	.....	3,297	.....	8,675	.....	58,385	.....	64,393	.....	101,468
Porto Rico—Cars	55	62,990	20	25,018	231	471,876	397	591,985	307	381,711
Parts*	.....	9,893	.....	8,537	.....	90,426	.....	110,394	.....	86,699
Philippines—Cars	27	40,555	56	75,095	300	371,689	338	462,852	466	562,930
Parts*	.....	6,237	.....	2,842	.....	57,349	.....	61,457	.....	46,239
Alaska—Cars	.....	.....	1	600	1	850	11	9,085	8	10,850
Parts*	.....	.....	.....	125	.....	1,114	.....	3,680	.....	2,089
Total	124	$189,723	110	$184,921	875	$1,723,019	1,198	$2,085,606	1,445	$2,303,739
Grand total	3,133	$3,602,513	3,146	$3,877,621	11,154	$15,204,490	21,014	$25,264,891	24,577	$30,816,504

* Does not include engines and tires. † Not separately stated prior to July 1, 1912.

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The Week's Incorporations

Pontiac, Mich.—Carter Car Co., under Michigan laws; authorized capital, $650,000.

Boonton, N. J.—Estler Garage Co., under New Jersey laws; authorized capital, $100,000; to conduct a garage.

Sioux Falls, S. D.—M. S. Gear Co., under South Dakota laws; authorized capital, $1,000,000; to deal in motor car supplies.

Cleveland, Ohio—Auto Jack Co., under Ohio laws; authorized capital, $10,000. Corporators—O. O. Vrooman, J. C. Logue, C. E. Mellen.

Seattle, Wash.—Service Garage Co., under Washington laws; authorized capital, $2,000. Corporators—L. W. Roe, D. A. Lord and others.

Wilmington, Del.—McCord Automobile Co., under Delaware laws; authorized capital, $500,000. Corporators—H. E. Latter, W. J. Maloney, N. P. Coffin.

Wilmington, Del.—Westchester Engine Co., under Delaware laws; authorized capital, $225,000. Corporators—F. D. Buck, M. L. Horty, G. W. Dillman.

Mayville, Wis.—Badger Auto Co., under Wisconsin laws; authorized capital, $20,000. Corporators—Richard A. Ruedebusch, Fred H. Lang, Antoinette Lang.

Wheeling, W. Va.—Schick Wheel & Tire Co., under West Virginia laws; authorized capital, $150,000; to manufacture and sell automobile tires and wheels.

Seattle, Wash.—Gibbs & Stratton Electric & Garage Co., under Washington laws; authorized capital, $2,000. Corporators—Charles W. Gibbs, Guy C. Stratton.

Toledo, Ohio—Kole Carburetter Co., under Ohio laws; authorized capital, $10,000. Corporators—Jacob Brunn, Francis M. Bostater, E. Edson Butler and others.

Portland, Ind.—Auto Supply Co., under Indiana laws; authorized capital, $10,000; to deal in motor vehicles. Corporators—R. D. Wheat, Nina G. Wheat, F. H. Mark.

Norwich, Conn.—Co-operative Auto Co., under Connecticut laws; authorized capital, $50,000. Corporators—R. J. Jodoin, John A. Allen, John H. Brown, John Quinn.

Carrolton, Ohio—Wood Auto & Machine Co., under Ohio laws; authorized capital, $10,000. Corporators—E. A. Wood, J. P. Monnyhan, E. C. Smith, P. B. Gaines.

Chicago, Ill.—Motor Tire Sales Co., under Illinois laws; authorized capital, $2,500; to deal in motor car accessories. Corporators—Frank Hutchinson, Emma Roesing, Alice S. Dwyer.

Washington, Ind.—City Automobile Co., under Indiana laws; authorized capital, $3,000; to buy and sell motor cars. Corporators—G. H. Greenwood, L. G. Helphenstine, L. A. Kennedy.

Toronto, Can. — Resilient Spring Wheel Co., Ltd., under Ontario laws; authorized capital, $40,000. Corporators—George H. Sedgewick, Austin G. Ross, James Aitchison, and others.

Milwaukee, Wis. — Grove Street Garage Co., under Wisconsin laws; authorized capital, $5,000; to conduct a garage. Corporators—Harry A. Keech, Edmund A. Ringel, Clarence Salenstine.

Cleveland, Ohio—Euclid Auto Livery Co., under Ohio laws; authorized capital, $10,000. Corporators—F. A. Poole, E. L. Lansing, B. J. Peck, William J. Warmington, Theodore Sokoloski.

Chicago Ill.—Jesco Installation Co., under Illinois laws; authorized capital, $4,000; to sell and install motor car accessories. Corporators—Carl V. Richardson, Harry F. Hamlin, Paul W. Gillett.

Orange, Conn.—Cameron Mfg. Co., under Connecticut laws; authorized capital, $1,000 000; to manufacture and deal in motor vehicles and boats. Corporators—Thomas M. Stoele, New Haven, and others.

Hamilton, Ohio—Ohio Mutual Automobile Fire Insurance Association, under Ohio laws; to insure members of said association against loss by fire, lightning or explosions from gas, or motor cars, motor trucks, etc.

Newark, N. J.—Acetylene Welding Co., under New Jersey laws; authorized capital, $50,000; to manufacture steel, copper, etc. Corporators—I. Boursonville, C. Boursonville, L. Lorenweticz, J. Lorenweticz, all of Newark.

New York, N. Y.—McNutt Can Co., under New York laws; authorized capital, $500,000; to manufacture and sell safety gasolene cans. Corporators—W. H. McNutt, J. F. Pierson, Jr., C. E. Rell, all of New York City.

Fairfield, Me.—Eastman Transportation Co., under Maine laws; authorized capital, $10,000; to own and operate motor cars and motor trucks. Corporators—A. F. Smith, Waterville; A. A. Eastman, J. M. Eastman, both of Benton, and others.

Brooklyn, N. Y.—E. A. Laboratories, under New York laws; authorized capital, $100,000; to manufacture motor car accessories, etc. Corporators—Emanuel Aufiero, 627 Kent avenue; Michael Aufiero and Daisy Aufiero, both of 185 Hewes street.

New York, N. Y.—Fred W. Young Co., under New York laws; authorized capital, $15,000; to repair motor cars, etc. Corporators—William J. Cahill, 871 Eighth avenue; Frederick W. Young and Arthur E. Brautigan, both of 242 West 56th street.

New York, N. Y.—Le Compte Cycle Car Corporation, under New York laws; authorized capital, $60,000; to deal in motor cars and cyclecars. Corporators—H. R. Buckingham, 37 Wall street; L. S. Higgins and Godfrey Goldmark, both of 32 Liberty street.

New York, N. Y. — Hayes-Diefenderfer Co., under New York laws; authorized capital, $10,000; to deal in motor cars and parts. Corporators—Alfred J. Diefenderfer, Bronxville; Edward Hayes, 1224 Pacific street, Brooklyn; Lee W. Bennett, 511 West 143rd street.

Buffalo, N. Y.—Steinbrenner Carburetter Co., under New York laws; authorized capital, $100,000; to manufacture carburetters. Corporators—William J. Steinbrenner, 107 Victoria street; John M. Hoen, 598 Ellicott square; James T. Briscoll, 690 Ellicott square.

New York, N. Y.—Michigan Motor Car Co. of New York, under New York laws; authorized capital, $31,500; to deal in motor cars. Corporators—Kenton Harman, 106 Morningside avenue; James A. Murphy, 435 West 45th street; C. Anthony Wolfe, Northport.

Middletown, N. Y.—Talking Horn Co., under New York laws; authorized capital, $10,000; to manufacture automobile and bicycle horns. Corporators—Nichol C. Oddo, 116 North street; Thomas N. Bingham, 5 Royes avenue; Floyd W. Morgans, 50 Hanford street.

Brooklyn, N. Y.—Vacuum Tire Corporation, under New York laws; authorized capital, $50,000; to manufacture and deal in automobile tires and accessories. Cor-

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porators—Willard J. Woodcock, 102 Gates avenue; Charles G. Ross, 66 Hancock street; Frederick L. B. Gartner, 150 Classon avenue.

Stamford, Conn.—North Stamford Avenue & Long Ridge Road Auto Bus Co., under Connecticut laws; authorized capital, $10,000; to operate a motor bus line. Corporators—Martin J. Potter, James F. Dunn, Henry Miller, Gutzon Berglum, Charles J. Weinz, Walter P. Terry, C. F. Waterbury.

New York, N. Y.—Vanden Plas of America, under New York laws; authorized capital, $10,000; to manufacture and deal in motor car bodies, accessories, etc. Corporators—Lignello Perera, 69 Wall street; A. Vanden Plas, 32 Rue St. Michel, Brussels, Belgium; Walter S. Newhouse, 37 Liberty street.

Minor Business Troubles.

Mercer W. Christian, trading in Richmond, Va., at 11 West Main street, as the Jefferson Garage, has filed a petition in bankruptcy; he states that his liabilities are $2,284.42. Among the larger creditors are: Alsop Motor Car Co., $200; S. F. Bowser & Co., $220; W. M. Batten, $272.

Upon the application of creditors, a receiver has been appointed in the Municipal Court in Cleveland, Ohio, for the John M. Rauch Motor Sales Co., of that city. Rauch, a former Sunday school superintendent, has been in the workhouse for some time following his conviction on the charge of contributing to the delinquency of a girl.

A petition in bankruptcy has been filed in the Federal court against the Bruns Auto Co., of Brooklyn, N. Y., Chalmers subdealer until last spring, when Carl H. Page & Co., the Chalmers representative in New York and the metropolitan district, opened a branch of its own house in that borough. The petition alleges that there are liabilities of $5,000 and assets of but $3,000. The petitioning creditors and their claims are: New York Lubricating Oil Co., $202.58; P. J. Collison & Co., $48; Walter E. Fleming, $250, for money loaned. Samuel Rodeman, who owns the building at Atlantic and New York avenue where the company maintained a service station, has incurred the displeasure of the court by locking out a city marshall who was guarding the property.

Recent Losses by Fire.

Fresno, Cal.—Waterman's Garage, destroyed. Loss not stated.

Austin, Minn.—Moreland & Anker, Main street, garage damaged. Loss not stated.

Michigan City, Ind.—Parker & Haskell Car Co., plant destroyed. Loss not stated.

Springfield, Mass.—Bay State Storage Garage, Liberty street, damaged. Loss, $20,000.

CHRISTMAS COVE, HAVEN FOR THE CHAMBER OF COMMERCE

Manager Miles Leads Directors, and Others, Far From New York's Roar—Pleasure Crowds Business Into a Corner.

Following the precedent established last year, the board of directors of the Automobile Chamber of Commerce held its regular July meeting far from the madding throng and the roar of 42nd street, New York. Instead it went to Maine, where only the ocean roars; that is to say, to Christmas Grove, where is located Manager Miles's country home, which is the sort of home possessed by few men in the automobile business.

Following last year's precedent, the Chamber's meeting was of unusual length; it occupied all of three days and part of another one, but also following precedent, the board of directors engaged in a minimum of work and a maximum of play. If it were tabulated, the schedule of the four days would read about like this: Wednesday evening, arrive; Thursday, fishing excursion; Friday, rain, and a very routine business meeting, also some other things out of the routine; Saturday afternoon, clambake; Saturday night, dinner party in honor of S. D. Garden, the Pierce-Arrow agent in New York and one of Host Miles's oldest and most intimate friends.

Since last year's session, Miles had discovered where mint juleps are grown and when he led his guests to them it is said nothing caused more profound amazement.

While nominally a meeting of the directors of the Chamber of Commerce, Miles's guests included several prominent members of the accessory trade and a number of personal friends. The Chamber of Commerce directors who were present were President Clifton, H. H. Rice, L. H. Kittredge, R. D. Chapin, Windsor T. White and W. E. Metzger. H. A. Bonnell, assistant manager of the Chamber, and A. L. Primble and Harry Fay, of the office staff, were also in attendance. The accessory contingent was made up of J. H. Foster, president of the Motor and Accessory Manufacturers, and C. E. Thompson, Alfred Reeves, D. J. Post and T. J. Wetzel. W. A. Redding, the Chamber's patent counsel, and R. D. Garden made up the remainder of the party.

Changes Among Prominent Tradesmen.

J. P. Nicholson, former district representative of the Service Motor Car Co., of Wabash, Ind., has been promoted to the management of the Chicago branch which just has been opened in that city. It is located at 1631-1633 Michigan avenue.

C. H. Snoke has been appointed sales manager of the Studebaker Corporation of Canada, Ltd., which is located in Walkerville, Ont. He succeeds Frank E. Fischer, resigned. Snoke, who has been in the Studebaker employ for 18 years, has served in many capacities, latterly as branch manager in Seattle, Wash.

To fill the vacancy caused by the mysterious disappearance, several months since, of J. Walton Lyman, which mystery remains unsolved, B. C. Swinehart has been appointed manager of the Philadelphia branch of the Republic Rubber Co. He previously had charge of the Republic establishment in Cleveland, where he has been succeeded by G. N. Talcott, formerly identified with the Republic branch in Atlanta, Ga.

General Motors' Action Divides Owosso.

Not all of the residents of Owosso, Mich., have taken kindly to the action of the General Motors Co. in closing its truck factory in that little city. In fact, two of them feel so strongly on the subject that they have asked the city council to bring suit against the General Motors interests to recover the property which was turned over to them in consideration of their locating their factory in Owosso. On the other hand, the Owosso Improvement Association has passed a resolution deploring such action on the part of their two fellow citizens, having received assurances that the factory will be reopened and occupied by another department of the General Motors organization and the contract with the city of Owosso will be otherwise fulfilled.

Removal Fails to Save Lansden.

The Lansden Co., which only about three months ago removed from Newark, N. J., to Allentown, Pa., has gone the way of the Webb Co., of Allentown, which also was one of the Mack brothers' properties: that is to say, the Lansden Co. is in the hands of a receiver. The man whom the court designated to fill that office is Morton E. Kern, who became general manager of the Lansden Co. when it removed to Allentown. The creditors allege that the company, which made electric vehicles, is insolvent.

Possible Intentions of Big Company.

Press despatches from Butler, Pa., report that it is "unofficially announced" that the new mill being erected by the Standard Steel Car Co., adjacent to its plant in that city, is designed for automobile manufacture; it is stated that the new factory will occupy several acres. Motor World's inquiry to the Standard Steel Car Co. itself, however, has failed to bring a response.

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In the RETAIL WORLD

A garage is to be erected in Ogden, Utah, by J. G. Ellis.

Charles E. Pickett, of Waterloo, Ia., plans to build a new garage.

The Kendall Auto Co., of Pasadena, Cal., is erecting a new garage.

The Greyhound Garage in Warsaw, Ind., has been sold to Hayes, Bros.

Herrick & Stoltey have opened a garage and repair shop in Champaign, Ill.

Daniel Roberts Harper will erect a garage on North Broad street, Philadelphia, Pa.

R. C. Manning has opened the Motor Shop on East State street, Trenton, N. J.

The Automobile Supply Co., of Rome, Ga., has opened a garage on Broad street.

The West Reading Motor & Hardware Co. has been formed in that Reading (Pa.) suburb.

A new garage is to be erected in La Porte, Ia., by the Hilmer Shull Auto & Supply Co.

James Callegaris, of Waterbury, Conn., is erecting a grage; it will stand on Frederick street.

Frank Kunkel will open an automobile repair shop on West Fayette avenue, Effingham, Ill.

Wisely & Shortt have opened a garage on Dingan street, West New Brighton, Staten Island, N. Y.

The Miles Standish Auto Co., of Oakland, Cal., will open a garage on 22nd street, Richmond, Cal.

Mrs. F. Morgan, of East Oak street, Globe, Ariz., has taken the agency for Studebaker cars.

E. B. Stimson has organized the Stimson Automobile Co. in Minneapolis. He will handle the Wahl car.

Herring & Co. of Mansfield, Ohio, have commenced the erection of a garage on South Walnut street.

William Schropp has purchased J. B. Lewis's half interest in his garage business in Washington, Kan.

A five-story garage is to be erected on East Second street, New York, for the Philip Weeks Estate.

Capt. Daniel McElroy is erecting a garage in Newark, N. J., at 628 Newark avenue; his son will operate it.

The El Camino Real Garage, Santa Barbara, Cal., is to be enlarged by an addition which will cost $21,500.

The Bechler & Ogden Motor Co., of Baltimore, Md., which handles Krit cars, has opened a service station.

E. Levene, of Philadelphia, Pa., has secured plans for a two-story garage; he will build on Diamond street.

D. O. Dotson has purchased F. D. West's interest in a garage in Kinsley, Kan., and will continue the business.

The Torkelson Carriage Co., of 414 Selby avenue, St. Paul, Minn., has taken the agency for the Moline car.

The Peerless Motor Car Co., of Philadelphia, Pa., is erecting a new building; the site is on Chestnut street.

The Ocean Boulevard Garage, Neversink, N. J., has built an addition to its garage to be used as a repair-shop.

Twin Light Garage is the style of a new business in East Gloucester, Mass. It is located on East Main street.

W. C. Bartlett's Forest Park Garage in Dickinson street, Springfield, Mass., has been enlarged and improved.

Charles Marks is to have charge of a garage that is being erected in Wormlesburg, Pa., for Jacob H. Mays.

The Wholesale Automobile Corporation has entered the trade in San Francisco; it is located on Van Ness avenue.

L. F. Hersh & Bro., of Newark, N. J., are about to erect a large fireproof garage; the site is on North Broad street.

J. J. Quinn, formerly a dealer in Minneapolis, Minn., has reentered the trade in Seattle; he has the Michigan agency.

The Bagnell Automobile Co., of 4160 Olive street, St. Louis, Mo., has changed its corporate name to the Cole Motor Co.

J. W. Moore has taken the agency for Marion cars for the State of Alabama and will locate on 20th street, Birmingham, Ala.

Thomas Evans, of Bloomington, Ill., has arranged for the erection of a garage on Main street. Work will be commenced at once.

The W. S. Williams Auto Sales Co. has opened up in Oshkosh, Wis. It has a three-story building at Otter and State streets.

John P. Barnett, Jr., has opened a new garage in Suffield, Conn., on Main street; formerly he ran a garage in West Suffield, in the same State.

The Harvard Building Co., of Seattle, Wash., will erect a large building on Pike street, to be used for automobile business. It will cost $80,000.

The D. K. S. Auto Supply Co., of Cape May, N. J., is building a garage which is nearing completion. The company has the agency for Ford cars.

The Turnbull Auto Co., of Willimantic and Norwich, Conn., has disposed of its Willimantic business to W. R. Frisbie, of Norwich; he will operate it.

N. B. Tilden & Sons have purchased the garage formerly operated by R. P. Cassill at 1660 Highland avenue, Hollywood, Cal., and will continue the business.

The Lincoln Motor Car Co., of Los Angeles, is about to open a new service station; space for this purpose has been secured in a Van Ness avenue building.

The Boochier & Ogden Motor Co., of Baltimore, Md., has opened a new service station on Highland avenue; L. D. Thompson is manager. The company is a Krit dealer.

The Badger Auto Co. has been formed in Mayville, Wis., by Richard A. Ruedebusch, Fred J. Lang and Antoinette Lang, with a capital of $20,000; the company will erect and operate a garage.

The Palmer Hardware Co., of Mammoth Spring, Ark., is about to enter the trade. A two-story garage is being erected and the company will stock a full line of accessories and Michigan and Ford cars.

J. A. Trow, of Canal Dover, has sold his garage on Wooster street to E. H. Zoller and Fred Potschnor. Trow will continue to manage the business, but the name will be the Dover Garage Co. Ford cars will be handled.

A garage and sales building is being erected in Paterson, N. J., on Ellison street. When completed it will be occupied by the Hackett Motor Car Co. and Fuller's Express Co. It will represent an expenditure of $10,000.

F. L. Fosha has disposed of his interest in the Washington Street Garage in Green

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Bay, Wis. His partner, L. P. Larson, will continue the business. Fosha has returned to a position as railroad engineer, his former occupation.

The Grove Street Garage Co. has been organized in Milwaukee, Wis., by Harry H. Keech, Edmund A. Ringel and Clarence Salenstine, with a capital of $5,000. Keech formerly operated a garage in that city on National avenue, near 11th avenue.

E. Van Benscheten, for several years Detroiter distributer in Clyde, Ohio, has opened salesrooms in Toledo, Ohio, in the Meredith building, at Jefferson and Michigan avenues. He will distribute Detroiter cars in both his new and old locations.

P. P. Bishop and C. A. Schmidt have taken over the garage formerly operated in Dubuque, Ia., by the Dubuque Auto & Garage Co., at 6th and Iowa streets; the building will be enlarged and remodeled and White and Overland cars will be stocked.

William H. Baxter, who formerly conducted a garage in Springfield, Mass., at 163 Dwight street, has taken possession of a new building, 100 x 110 feet, at Oak and State streets. The garage is the largest in the city. Baxter is dealer in Paige-Detroit and Marion cars and Federal trucks.

On August 1st, John A. Hamilton, for many years manager of the accessory department of the Gibbes Machinery Co., of Columbia, S. C., will take over the accessory jobbing business of that company and continue it at 1216 Main street in Columbia. He will conduct it in his own name.

Arthur C. Brady, who with A. T. Murray formed the Brady-Murray Motors Corporation in March to handle the Chandler car in the metropolitan district, has withdrawn from the management of the company; both men were formerly connected with the factory of the International Motor Co. at Allentown, Pa.

Having passed successfully through a probationary period of 60 days, the clearing house of the Fresno (Cal.) Automobile Dealers' Association has been made permanent. N. R. Cooper has been made permanent secretary and treasurer, succeeding E. W. Johnson and Theodore Sheldon, who held these respective offices.

R. C. McClay and G. A. Howard, of Los Angeles, have combined parts of their names in a new business which will be styled Claward Company's Garage. The building, which is being erected at 645 South Hope street, will be 80 x 150 feet with a 12-foot truss roof. McClay has been connected with the Pierce-Arrow agency in that city.

A. H. Collins and D. E. Wells have formed the State Automobile Co. in Detroit, Mich., and have located at 603 Woodward avenue; they will distribute R. C. H. cars in Northern Indiana and Lower Michigan. Collins formerly was Western and Southern sales manager for the Herreshoff Motor Co., of Detroit, and prior to that managed the Staver racing teams. Wells will do territorial work for the new organization.

$30,000 Damages for Hartford Suspension

The Hartford Suspension Co., of Jersey City, N. J., has been awarded $30,572.76 damages by the master, Henry D. Oliphant, who was appointed by the United States District Court for the District of New Jersey to determine to what extent the Hartford company had been damaged by the infringement of its shock absorber patent by the Westen Mfg. Co., of Newark, in the same State. The patent is reissue No. 12,437, granted January 16, 1906, of which the original, No. 695,508, was issued March 18, 1902, and the Hartford company charged that the Westen company infringed with a shock absorber it manufactured. The suit was won by the complainant in the United States District Court and the decision was affirmed in February, 1912, by the United States Circuit Court of Appeals, to which the Westen company took the case. Following this affirmance, the lower court proceeded to ascertain the damages sustained, and the Hartford company is now entitled to collect the amount named.

Whitney Again to Enlarge Plant.

Although the Whitney Mfg. Co., of Hartford, Conn., only recently completed a two-story, 50 x 180 feet, addition to its plant, which now is being equipped with machinery, it is again preparing to enlarge its factory. The newest addition will be a four-story concrete structure, 60 x 112 feet, affording 26,880 square feet of floor space.

Incidentally, the Whitney company has disposed of its 20-inch water tool grinder business to the Taylor & Fenn Co., of Hartford, and hereafter will devote itself entirely to the production of chains, Woodruff keys and cutters and hand-feed milling machines.

Cincinnati Club "Going Into" Accessories.

Following the example of clubs in New York, Philadelphia and elsewhere, the Cincinnati Automobile Club is preparing to open a supply and accessory depot for the exclusive benefit of its members. L. S. Colter, the secretary of the club, has been authorized to carry out the project, which probably will be in full operation by September 1st.

Prest-o-ceal Makes Appearance in East.

For the purpose of marketing Prest-o-ceal, a new puncture closing compound made by the American Mfg. & Distributing Co., of Louisville, Ky., the Manhattan Accessories & Distributing Co. has been organized in New York with Hugh G. Morrow as its general manager. It has opened offices in the United States Rubber Building, at Broadway and 58th street. Prest-o-ceal is not a tire filler but a vegetable compound which is inserted in the tire and fills about six per cent. of the air space and automatically seals punctures when they occur.

Ward Leonard to Triple its Capacity.

To cope with the steadily increasing demand for its electric lighting and engine starting equipment, the Ward Leonard Electric Co., of Bronxville, N. Y., has well under way an enlargement of its factory which will permit the trebling of its present output. The addition, which is now nearing completion, will also relieve the congestion of the Ward Leonard installation department, which has been sorely taxed because of the accessibility of the factory to New York City.

Nichols to Manage Knight Tire Branch.

J. C. Nichols, president of the General Automobile Supply Co., of New York, who has had the metropolitan agency for Knight tires, has, with principals of the Knight Tire & Rubber Co., of Canton, Ohio, organized the Knight Tire Co. of New York, which will become practically a factory branch with Nichols as manager. It will locate on 52nd street, near Broadway.

Adamson Secures Preliminary Injunction.

Judge Anderson, sitting in the United States District Court in Indianapolis, has granted a preliminary injunction to the Adamson Mfg. Co., of East Palestine, Ohio, restraining the Marshall Iron Works from making, selling or in any other way infringing the patents covering the Adamson portable vulcanizer; the device is covered by patent No. 1,057,911.

Steenstrup to Return to the East.

Peter S. Steenstrup, at one time prominently identified with the Hyatt Roller Bearing Co. and who also served as secretary of the Motor & Accessory Manufacturers, is preparing to again take up permanent residence in the East. Some three years since he removed to the Pacific Coast, where he since has engaged in the accessory trade.

To Make Spark Plug Testers in Seattle.

Harry Dalitz and Arthur Henrich have organized the Dalitz Mfg. & Sales Co. in Seattle, Wash., for the purpose of manufacturing and marketing a spark plug tester invented by Dalitz. They have established a shop at 803 Union street, in Seattle.

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A. B. SWETLAND, President and General Manager
F. V. CLARK, Business Manager.

EDITORIAL DEPARTMENT
R. G. BETTS, Managing Editor
S. P. McMINN HOWARD GREENE
R. W. SHERMAN

ADVERTISING DEPARTMENT
BROCK MATHEWSON, Manager
New York Office
1600 Broadway
HOWARD L. SPOHN LOUIS R. SMITH O. H. ADAMS

Western Office
1001 Ford Bldg., Detroit, Mich
W. H. TRIPP, Mgr.

Detroit
1001 Ford Bldg.
MAXTON R. DAVIES

Cleveland
610 Superior Ave. East
C. H. HANDERSON

Chicago
Room 510 Harvester Building
606 South Michigan Avenue
H. A. WILLIAMS

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NEED FOR PROPER SPEEDOMETER DRIVES.

With the present tendency of manufacturers to send their cars from the factory completely equipped with all the necessary fittings that not so long ago were regarded by everyone as extras, and as such were paid for, it is perhaps surprising that no greater attention has been paid to the desirability of some form of standard speedometer drive mounting.

To attach a speedometer to be driven from one of the front wheels is beautifully simple, requiring as it does merely that a bracket be clamped to one of the steering knuckles and a ring gear screwed to the wheel. But at best it provides a drive that is painfully open to abuse and to dirt; a flying stone, or a small stick caught between the gears is quite likely to put the apparatus out of business. Again, it has been demonstrated on several occasions that even slight bouncing of the front wheel which is likely to take place at anything greater than moderate speed is bound to have a bad effect on the accuracy of the instrument. All of which is second to the consideration that the driving shaft—an expensive piece of work—is quite unprotected and is liable, particularly when the wheels are turned, to come in contact with the tires and be damaged.

To be valuable, it is obvious that a speedometer must be accurate, and the wonder is that so many of them really are accurate in spite of the obsolete manner in which they are driven. For accuracy—not merely momentary accuracy, but accuracy that is continued during the life of the instrument—it is essential that the driving gear and the driving shaft be protected, and one very good way to protect these parts is to take the drive off the propeller shaft or through the gearset. Already several manufacturers have realized this fact and have acted accordingly, and it is not too much to hope that others, too, will see the light, for their own good as much as for the benefit of those who use their cars.

THE VALUE OF KEEPING PROMISES.

Although the value of keeping business promises, and promises of all other sorts, for that matter, is well known and has been remarked times without number, it appears not yet to have been generally appreciated by all of those engaged in the automobile industry.

There probably is nothing which roils a patron, or an intending patron, more than failure to keep promises, whether it be in the delivery of a new car or in the completion of a repaired car; it is not uncommon for such patrons to be put off from day to day with excuses of one sort or another, and like as not the excuse is not offered until the patron calls for his car only to be disappointed.

Of course it is a very human desire to "make customers feel good," but in the effort to do so the very opposite result often is attained. The solution, however, is comparatively easy, although many men seem unable to realize it. In the first place, no promise should be made which cannot be kept, and in the second place when, through unavoidable causes, delays occur that render it impossible for promises to be adhered to, nothing is easier than to resort to the telephone and explain matters.

When originally he does not promise too much, the chief mistake made by the average dealer is to wait until customers call, when the burden of excuse-making is made doubly disagreeable. With a comparatively simple solution always within grasp, it is remarkable that so many merchants do not make use of it.

USEFULNESS OF THE BUMPER.

In the seeking for new equipment and more of it, it is not strange that some of the automobile manufacturers have turned to the bumper. While not absolutely indispensable, it is a highly desirable fixture to have attached to the front of a car, and, parenthetically, it serves useful purposes when attached to the rear.

In the customary place, however, its usefulness is undoubted. It is not so much that it saves lamps and fenders as that it protects the radiator, which is so very vulnerable as to require protection. Quite apart from damage to lamps and radiators, it should be borne in mind, as Motor World pointed out many months ago, that such damage usually is too small to be covered by the $25 insurance limit and as a result such losses are complete.

The suggestion, therefore, is plain that when car makers do not equip with bumpers, it is good business on the part of dealers to prosecute their sale. Few accessories offer more effective selling argument.

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PARCEL POST TO CARRY 20 POUNDS AFTER AUGUST 15

Postmaster General Promulgates New Regulations and Rates — Other Popular Changes Likely—Senate Questions Authority.

With the object of making the Parcel Post of still greater advantage to its users, the maximum parcel weight has been increased from 11 to 20 pounds, and other changes have been inaugurated by Postmaster General Burleson in an order which will become effective August 15; the changes include several alterations in zones and reductions in rates, and while they are but a part of the government's cautious procedure in increasing the parcel post facilities, many more are contemplated. In fact, the Postmaster General states that he expects that within 15 or 20 years the postal department will handle practically all of the small parcel business and that the weight limit will reach 100 pounds.

"In the making of extensions and reductions of rates it is necessary for us to proceed with caution," said Postmaster General Burleson, "so as to afford ample opportunity to prepare for the increased business. For that reason we have made the changes proposed apply only to the first and second zones. I appreciate fully the sentiment for an increase in the weight limit and a reduction in rates to all zones, but it is necessary for us, in a sense, to feel our way."

Mr. Burleson announced the changes as follows: "The first zone shall include the territory within the local delivery of any office, and the first zone rate of postage will apply to all parcel post mail deposited at any office for local delivery, or for delivery by city carrier, or on rural routes emanating from that post office.

"The second zone shall include the remainder of what is now the first zone, together with the present second zone, and shall include all the units of area located in whole or in part within a radius of approximately 150 miles from any given postoffice.

"The rate of postage on parcels weighing in excess of four ounces in the proposed first zone will be reduced from 5 cents for the first pound and 1 cent for each additional pound or fraction thereof to 5 cents for the first pound and 1 cent for each additional two pounds or fraction thereof, and the rate for the second zone will be reduced from 5 cents for the first pound and 3 cents for each additional pound, or 6 cents for the first pound and 4 cents for each additional pound or fraction thereof, to 5 cents for the first pound and 1 cent for each additional pound or fraction thereof.

"The maximum weight of parcel post packages will be increased from 11 pounds to 20 pounds, the increase of weight to apply only to the first and second zones. No change has been made in the size or form of the package."

Statistics collected by the department show that quite one-third of the total number of parcels mailed are handled within the proposed first and second zones, and the Postmaster General believes the increase in the weight limit and the reduction of the rates of postage in the first and second zones, as proposed, will benefit greatly more than one-third of the public; and that the producer, the consumer and the local merchant will profit materially by the changes.

At the outset it was estimated that 300,000,000 parcels would be handled during the first year of the operation of the parcel post system, but it now appears from the statistics that, influenced by the changes proposed yesterday, the service will be so popularized that the number of parcels carried during the ensuing 12 months will be more than double the original estimate.

The rate sheet, which is to be used as a substitute for the parcel post map, will be prepared as soon as practicable and attached to the parcel post guide. The rate chart, to be made for each separate postoffice, will be worked out from the focal point of the unit in which the postoffice is located. The simplicity of the plan, it is thought, will make easily determinable the rate of postage from that unit to any other on any mailable parcel, and will greatly facilitate the handling of parcel post matter at post office windows.

The insurance fee, which originally was 10 cents, was found to be excessive, and an order, effective July 1, reduced to 5 cents the fee on parcels insured to actual value up to $25; and a 10-cent fee is exacted only on parcels insured to actual value of more than $25 and not exceeding $50.

After the new rates were announced the Post Office Committee of the Senate questioned the authority of the Postmaster General to make the changes, and he has been directed to appear before the committee at a meeting to be held to-day, 24th inst., to explain his authority. The committee appears to hold the belief that Congress should make or at least confirm such action.

Firestone Offering Road Signs Free.

It will not be the fault of the Firestone Tire & Rubber Co. if every dealer in the land does not post the roads with his advertisements, for the Firestone company is now offering the necessary signs to all Firestone dealers, absolutely free of charge. They are given the choice of imprinted metal or muslin road signs.



*Indicates Sanction by A. A. A.

July 21-25, Grand Rapids, Mich.—Grand Rapids Automobile Club's reliability tour.

July 26, Orangeburg, N. Y.—Rockland County Fair Association's track racemeet.

July 26-31, San Antonio, Tex.—San Antonio Automobile Club's reliability tour.*

July 28-29-30, Galveston, Tex.—Galveston Auto Club's beach racemeet.

July 29-31, Lincoln, Neb.—Lincoln Automobile Club's reliability tour.

Aug. 3, Wichita Falls, Tex.—Track racemeet under auspices of J. A. Sloan.

Aug. 7, Amarillo, Tex.—Track racemeet under auspices of J. A. Sloan.

Aug. 9, Brooklyn, N. Y.—Motor Dealers' Contest Association's track racemeet at Brighton Beach.

Aug. 9, Santa Monica, Cal.—Santa Monica Road Race Committee's road races.

Aug. 10, Pueblo, Tex.—Track racemeet under auspices of J. A. Sloan.

August 12, Kansas City, Mo.—Kansas State Automobile Association's reliability tour.

Aug. 15-16, Denver, Col.—Track racemeet under auspices of J. A. Sloan.

August 18-22, Milwaukee, Wis.—Wisconsin State Automobile Association's fourth annual reliability tour.

Aug. 25-28, Houston, Tex.—Houston Automobile Club's reliability tour.

August 29-30, Chicago, Ill.—Elgin Road Race Association's road races.

August 30-September 6, Chicago, Ill.—Reliability tour of the Chicago Motor Club.

Sept. 1, Columbus, Ohio—Columbus Automobile Club's track racemeet.

Sept. 9, Corona, Cal.—Speedway track races.

Sept. 12, Youngstown, Ohio—Canfield Fair Association's track racemeet.

Sept. 13, Covington, Ky.—Cincinnati Automobile Club's track racemeet.*

Sept. 20-21, Detroit, Mich.—Track racemeet under auspices of Michigan State Fair.

October 4-11, Chicago, Ill.—Chicago Motor Club's Around Lake Michigan reliability tour.

Oct. 10-17, Paris, France—Annual automobile salon.

Nov. 6, Phoenix, Ariz.—Track racemeet under auspices of State Fair Association.

November 24, Savannah, Ga.—Vanderbilt Cup road race under auspices of the Savannah Automobile Club.*

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WINS NATIONAL TOUR WITH FOUR-YEAR-OLD LOCOMOBILE

For the First Time, Private Owner is Awarded Principal Prize—Glidden Team Trophy Goes to the Boston Metz Team.

For the first time in the long history of the Glidden tour and the much shorter history of the American Automobile Association National Reliability Tour, the name of a sure-enough amateur driver at the wheel of a privately owned and privataely entered car will be inscribed on the chief trophy.



NOONDAY STOP OF THE A. A. A. RELIABILITY TOURISTS

Driving a Locomobile touring car of the vintage of 1909 that already had seen 100,000 miles before it was entered for the 1,300-mile jaunt from Minneapolis to Glacier National Park, Dr. J. D. Park, who is vice-president of the Duluth Automobile Association, won in the touring car class with a perfect score and was awarded the A. A. A. trophy. To the team of three little Metz cars representing Boston and driven by G. H. Voter, Charles and G. W. Metz, fell the famous Glidden trophy for the best team performance. The Anderson trophy for the best individual performance in the roadster class was awarded to R. W. Munzer and his Hupmobile, who, with the three Metz drivers, the Northwestern Automobile Co.'s Krit, and the other Hupmobile driver, finished with a clean score and drew lots for the prize. The same drivers drew lots for a trophy offered by the Minneapolis News, which was won by G. H. Voter. The tour was brought to an end on Saturday last, the final scores being as follows and 1,000 representing a perfect record:

No.	Entrant and car.	Score.
5	G. H. Voter, Metz	1,000
6	Chas. Metz, Metz	1,000
7	G. W. Metz, Metz	1,000
10	Northwestern Auto Co., Krit	1,000
14	R. W. Munzer, Hupmobile	1,000
15	R. W. Munzer, Hupmobile	1,000
17	E. B. Stimson, Chalmers	1,000
20	E. A. Everitt, Locomobile	1,000
4	L. H. Fawkes, Premier	995
8	Northwestern Auto Co., Krit	992
12	L. C. Erbes, Velie	980
21	F. J. Lyman, Maxwell	930
11	Dr. C. A. Smith, Kissel	858
16	J. A. O'Brien, Little	827
18	Dr. F. W. Humphries, Locomobile	620
9	Northwestern Auto Co., Krit	430
19	L. C. Newlon, Chalmers	Withdrawn
2	L. H. Fawkes, Marmon	Withdrawn
3	H. F. Legg, Stutz	Withdrawn

Although the victory of the Metz team in the roadster class might have been foreseen, for all of the little cars early demonstrated their ability to negotiate the roads and to accept punishment with less effect (on scores) than could many of the larger and heavier cars, Dr. Park's victory in the touring class was almost a complete surprise, and to those who have watched the progress of previous Glidden tours it must have been a welcome one. Considering the age of the Locomobile he drove—it is a chain-driven car—and the fact that he had pitted against him cars newer by several years, and in the hands of professional drivers, his performance is nothing short of remarkable. Because of his steady, consistent driving he attracted no attention to himself, and it is altogether likely that those who drove against him never considered him as a serious contender.

All told, but eight of the original 19 starters pulled into Glacier Park with scores unblemished and of the remaining machines one was withdrawn shortly after leaving Devil's Lake on the fourth day and two more were withdrawn before the finish line was reached, leaving only 17 to check in. Shortly after leaving Glasgow, and while traveling at fairly high speed, the Stutz driven by N. F. Legg rammed the bottom of its crankcase against a sharp rock in the roadway and came out of the encounter very much the worse; the car was shipped back to Minneapolis. After leaving Wellington, N. D., Fawkes burned out the clutch in his Marmon and withdrew.

The run from Minot, N. D., where the tourists rested over night on Tuesday, 15th, to Williston, in the same State, which was the route covered on the sixth day, was the shortest negotiated during the whole of the trip, and the dusty drivers rolled off the 135 miles in good time. The bright sunlight caused both drivers and passengers a great deal of discomfort, and when the caravan pulled into the night control most of them presented curious spectacles, for with few exceptions they had tied handkerchiefs over their faces, and those who had not done so were covered with layers of cold cream and dust. For more than an hour the trail was lost by the pacemaker, and a dozen of the cars, and it was only after much circling around among abandoned roads and gullies that the confetti trail again was picked up. Despite the shortness of the run, Dr. C. A. Smith, who drove a Kissel, found it impossible to keep up with the schedule because of a leaking radiator, and he was penalized 120 points for getting in late. Clarence Munzer, who drove one of the Hupmobile entries, also had a close shave, but saved himself from penalization by a margin of 10 seconds; he had four blow-outs on the road and finished on a rim.

From Williston to Glasgow, Mont., slightly better roads were encountered and a little rain during the night had laid the dust; as a result, all of the cars checked in on time, or, rather, considerably ahead of time, for the 164-mile run was made in fast time. It was during this part of the run that Fawkes's Marmon, which up to that time had run with a perfect score, burned out its clutch bearings and was forced to retire. A little further on the Mitchell "six" pacemaker shattered a steering knuckle. Luckily, however, the hotel train passed in full view of the accident and the Vulcan welding representatives soon patched up the knuckle and sent the car on its way.

During the morning run over the Montana plains dust was terrific, and on several occasions those who followed the pacemaker had nothing to guide them but his dust. Only once during the day were bad

(Continued on page 35.)

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WIDE-A MERCHA In the MOTOR

EMPLOYER EMPLOYES' MODEL

Whole Establishment Likely to Shape Itself After "Boss's" Makeup—Thoroughness in Head of Business and What It Means.

Your customers are building up or tearing down your business all the time. Whichever it may be, depends largely upon you and how you have trained your force of assistants — salesmen and workmen — to do their work and look after the customers.

Men working in a garage get their inspiration from the men higher up. If the boss is easily satisfied and his only object is to get the customer out of the way and on the road without actually delving to the seat of the trouble and effectually curing it, the men will soon acquire the habit and handle all the trade that way.

On the other hand, if the boss insists that the work be done carefully and thoroughly the men will make a business of diagnosing troubles with a view to permanent results. No slipshod, half-baked work will come from such a shop; and pleased customers will do all the boosting that is necessary.

Respect Man Who Insists on Good Work.

This fact is being exemplified in a thousand different places every day. Men who use cars appreciate good work; men who repair cars respect a boss who insists on good work; they like working in such an atmosphere. They know that the mechanic who is a good workman need never fear as to his future. Customers will follow him from one place to another. When he is ready to go into business for himself he can cash in on this following.

Train your workers to take an interest in the cars you sell; explain what it means to you and to them to have the customer's interest continually at heart.

Just the other day a motorist went to a repair shop to get a fan belt put on. After the work was done and he was leaving, the workman's trained ear caught the noise of a loose propeller shaft. Instantly he stopped the customer and told him the trouble, and then proceeded to make the adjustment. The customer thanked him and paid the bill cheerfully on the spot.

By the way, the policy of getting cash for repairs continues to grow among garagemen; it is good business for everybody concerned. It eliminates the item of "bad debts" and permits fair, square pricing, and if there is any complaint to be made it can be settled on the spot.

CARRYING THE SERVICE IDEA INTO THE TIRE BUSINESS

The Tire & Auto Service Co., 2128 Woodward avenue, Detroit, have a tire service that makes a strong appeal to every car owner in the vicinity. The basic idea of the organization was and is to give a day-and-night tire service—to build and establish a tire business on the theory that if service is important on an automobile it is doubly important where tires are concerned.

Supposing you have a puncture and want a tire changed; no matter where you are, if it is within a radius of 25 miles from Detroit, they will send a man and a tire to you. Supposing you drive your car into the garage at night and, after breakfasting and getting all ready to leave, you discover that one of your tires has gone flat. You simply 'phone the Tire & Auto Service Co. and they will send a man who will make the changes during the morning or while you are on the way to the office. They charge 60 cents an hour for the man's time and have a regular tariff of prices for the various kinds of service. And they are open day and night and Sundays. The motorist who has had a blow-out on Sunday or late at night can thoroughly appreciate what it means to have help available. Does it sell tires? Well, the company is only about six months old and is doing a rattling good business; for obvious reasons the exact figures are withheld.

LONDON STORAGE RATES ARE MUCH LESS THAN NEW YORK'S

While storage of cars in garages outside the two or three largest cities in the United States may reach a price as low as $15 a month, garagemen generally are likely to marvel at the rates which are obtainable in London, which is somewhat larger than Greater New York but has lower garage rates by 50 per cent. and more in some cases. New York garage rates run from about $15 up to $45, according to the garage, location and size of car stored, but $15 is not common.

Also, in London the storage rate is weekly rather than monthly, and a fair sample of prices is obtainable from the price schedule of the Austin Motor Co., which has its London garage—a high-grade establishment—at 479-483 Oxford street west. The principal rates are: Private lock-up garage with electric light and water for washing, 15 shillings a week, or, in American money, $3.75 a week, or $15 a month; garage without lock-up accommodation, 12 shillings 6 pence, or $3.15 a week, or $12.60 a month; garage for one night, 2 shillings 6 pence, or 63 cents; washing and polishing a car, 4 shillings 6 pence, or $1.13. A customer who leaves his car for a short period, such as a couple of hours, is not charged anything.

Value of Idea is in Using It.

The only way a good idea can be made valuable to you is by putting it into practice. Just reading about the good ideas and the ingenious plans that have worked success for others will not help you in the least unless you put those ideas and plans into execution for yourself. One good idea put into action is worth a million that you have read about and forgotten.

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PAVING WAY FOR NEW MODELS

Methods by Which Dealer Can Couple His Own With Manufacturer's Advertising—Whetting the Prospect's Interest Just Enough.

Many announcements of new models are being made or will be made in the very near future, which suggests that it is a time when the dealer can take more than ordinary advantage of the manufacturer's advertising.

An ideal campaign for a local representative or dealer at this time would be as follows: First stir up interest in the forthcoming new model and arouse curiosity by means of "blind" newspaper advertisements. By "blind" is meant statements that create interest without actually giving details, follow this up by a sign in the window stating that the new models will arrive and be on exhibition about such-and-such a date.

Paste the "Ad" in the Front Window.

Then when the manufacturer's announcement appears in Motor World or one of the other national publications, clip out the advertisement and carefully mount it on cardboard and display it in the window. By this time—or earlier—you ought to have the car. Write a note (personal) to every prospect in your territory inviting a visit of personal inspection or advising when you will have the new model at their town, if in another locality. Then 'phone your choicest list of prospects and make an appointment to send a car for them and bring them to your salesroom. People like to be noticed in this way—and the invitation to come and give his opinion on the new model is a compliment that will often get attention when nothing else will serve the purpose as well.

The day before the car arrives insert a striking advertisement headed "Will Be Here To-Morrow," then following a further statement of interesting facts; when the car is in your salesroom another announcement should be made to the public giving some of the most pertinent points without covering every detail.

Some dealers make the mistake of telling everything, leaving nothing for the customer to learn when he arrives. Just tell enough to make the matter interesting and crystallize curiosity into action so they will come and take a look.

SUMMER AND WINTER ENERGY AND THE ALL-YEAR KIND

Some salesmen put their energy in a refrigerator during the summer months, hoping it will keep fresh until fall—when they intend to use it. Others keep theirs out and expose it to the heat and find out how real it is; they learn that real energy starts up in the "think tank" and is impervious to weather conditions. It is just as available at 106 in the shade as at 60. It is this kind of energy that stirs up things and makes business when the other fellow is telling everybody how quiet it is. It means shutting the eyes to golf and baseball and boating and all the other things that take the place of work; in a word, it means sacrifice and ceaseless work during working hours—but the man who cultivates real energy or "hustle" will have plenty of time for outdoor sports when the other fellow is still looking for his weekly envelope.

SORTING PROSPECTS INTO THEIR PROPER CLASSES

Are you getting after your prospects? Have you got the live ones sorted out from the rest so that you can say without hesitating, "My best prospects are so-and-so"? If you have not succeeded in organizing your prospects in this way in your mind and on paper you had better get busy.

The good salesman has all his prospects graded into classes, and he knows just about when he is going to land this one or that one. Then he tries to beat his "hunch," and first thing you know he has done it.

The way to make a sale is to sell the man—and you will never sell him by staying away—just as you will never sell him if you simply call to "see" him. This is the time of vexatious delays and put-offs. It is also the time of sudden sales—deals coming to a quick head that you never dreamed would be closed till fall.

CHALMERS "CLEAN-UP" DAY AS A GOOD EXAMPLE

July 28th will be "clean-up" day for Chalmers dealers throughout the country. On that day, if not earlier, every Chalmers dealer will get out his mop and scrub pail and go through his establishment with a view to having it all thoroughly "laundered" and in spotless, apple-pie order for the reception of new Chalmers models.

Clean windows, clean floors, regilded signs, fresh kalsomine on the walls, and anything and everything that will make the dealers' place of business look like an enterprising, aggressive, up-to-date establishment ready for doing business with the best of the buying public, will be in order. Other dealers are recommended to try the same dose.

INSTRUCTION TO OWNERS AND ITS EFFECT ON GUARANTEES

A Dakota dealer who prides himself on his liberal guarantee, which amounts to "If you break anything in service the first year I will replace it free of charge," traces much of his success to the thoroughness with which he teaches buyers to drive and care for their cars. On 70 cars sold, his claims during the past year amounted to a little over $10. "Stay with him until he sends you home," is the brief, pointed order issued to the man who teaches them—and he does.

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ACTION—THE STUFF THAT MAKES DREAMS COME TRUE

Thinking Without Execution a Profitless Occupation—Studebaker Salesmen Instructed to Shun Sales-losing Inactivity.

Gun experts know how far a gun will carry on a given charge of powder. To increase the range they increase the powder—up to the capacity of the gun.

It is about the same with salesmen. Most of us are capable of carrying much further than we do—we only need a little more powder. The powder that carries the salesman through the crowd, and makes him ring the bell with an order, is Action. He must first have the right frame of mind—the right desire—the right aim.

But this is not enough. Some of the greatest failures in the world have been those of thinkers and dreamers who had the right frame of mind—the right desire—and, generally speaking, the right aim, yet who just couldn't act.

Look at the names of the men in our own business who have become famous in their chosen work—they are great because they harnessed action to plan and drove with purpose.

Success is the direct result of desire intensified to the point of action. A clearly defined ideal, backed by a big charge of powder, must precede every permanent success, says the Studebaker News.

Wet powder won't do. This is the day of the man who really acts—whose powder has propulsion in it. There never has been a time since we of the present generation can remember when opportunity for intelligent initiative and action offered such quick and certain reward.

Selling of goods has undergone a change in the last few years, and the end is not yet. Yesterday's methods and reputations will not bring results to-day.

It is up to each of us to count the number of times that we have called on a prospect and found that he had bought some other make of car the afternoon before, when we felt deep down in our own minds that we had been guilty of inaction and could have secured the order if we had been on the job.

Doesn't it hurt?

When a prospect comes into the salesroom, he generally is interested in the purchase of an automobile. We doubtless use our best selling talk to intensify that interest and to create a desire to buy. The prospect seems nearly closed, but leaves the store without buying, and we sometimes do much loud talking about the order we are going to get in the morning. But somehow we are terribly busy the next morning and the call is postponed until afternoon. Maybe we get him then, but if we do it is luck.

Did you ever stop to think, Brother Salesman, that every time we postpone a "follow-up" we are allowing a perfectly good desire for our car to go roaming around the streets with that desire unsatisfied—a prey for the live salesman next door? Well, we are, and it's ten to one that the very salesman next door is the one that we have been roasting as a lucky dog that got his job on a bluff. No, he didn't—he got it because he was alive and had the ability to take advantage of our inaction and to intensify the desire of our prospect sufficiently to get the name on the dotted line.

There is a law that governs all this. Here it is: Every idea or conclusion which enters the mind of a prospective buyer is accepted as true unless hindered by some contradictory argument. The salesman with action is the one who never allows a prospect to run around loose without a pretty good antiseptic for contradictory arguments.

Think out a plan for every day's work—let nothing interfere with the calls that you know you should make—a little forethought and planning will save a whole lot of running around, and a little clear seeing will save a pile of looking.

One of our dealers in the East went out on the back porch one morning to bring in the milk bottles. He found them flirting with the morning paper. By the latter he noticed that Dr. Brown, the village doctor, in answering a midnight call had been thrown from his buggy in a mishap that resulted in the death of his horse. Without waiting for breakfast, the dealer jumped into his demonstrating car, drove to the doctor's office and offered the doctor the emergency service of car and driver, without cost. The car never came back, for the doctor, long proof against anti-buggy suggestions, realized the need, and salesmanship supplied it.

The successful salesman in this age of competition must have the ability to act—to see what should be done—then to "do it quick," caring nothing for precedent or tradition. Did Edison, Marconi, Burbank, Peary, or any other leader in the world's work, follow the path of dead men? No, they dreamed, desired, acted and won.

When your prospect list gets low and you can't possibly see a sale in sight, sit down and think. Work out something from your own brain. You'll be surprised at the mess of good ideas that you have stored away, if you will just take a little time to dig them out.

Every day in your own town something happens that leads to a possible purchaser. The live salesman is the man who has cultivated the habit of seeing opportunities—and the habit of acting.

The only habit that ever kept a man in a rut is the habit of not thinking—and not acting.

The greatest psychologists of the day have proved that the average man uses but a small fraction—say a third or a tenth—of his inherent brain power. The rest lies idle. Why? Because original thought has not put it to work—and the original way of thinking—your personal way of thinking—is the only way that will carry you to real success in your business.

Sell the thought to yourself—then translate it into action.

Change in Chalmers Price Chief Alteration.

With $175 lopped off its price, which henceforth is to be $1,775 instead of $1,950, the new Chalmers "Thirty-Six," specifications of which just have been permitted to become public property by the Chalmers Motor Co., of Detroit, Mich., is essentially the older Chalmers except that it has a number of detail refinements that affect more than anything else its external appearance. The fenders, for instance, now are rounded after the manner that appears to be gaining in popularity and the gasolene tank and spare tires now are carried at the back of the tonneau; control elements have been placed within easier reach of the driver and a dash carburetter adjustment has been added. Otherwise, changes are few and far between, the motor remaining of the long-stroke type with four 4¼ x 5½-inch cylinders; as heretofore, the gearset is selectively operated and provides four forward speeds and reverse, wheels are shod with 36 x 4-inch tires and the wheelbase remains 118 inches. As usual, the Gray & Davis electric lighting equipment is standard and the car is fitted with the Chalmers compressed air engine starter. Equipment that is included in the price is a top with Collins quick-acting curtains, rain-vision windshield, Warner speedometer, power tire pump, horn, pump, jack and full set o tools.

Cyclecar Project Interests Michigan Town.

Oscar J. Howick, of Detroit, who has designed a cyclecar, is coquetting with Fenton, Mich., for the factory necessary for its manufacture. He already has secured support and probably will locate there. The vehicle he has in mind will cost about $600.

Pierce-Arrow and Pathfinder Add Bumpers.

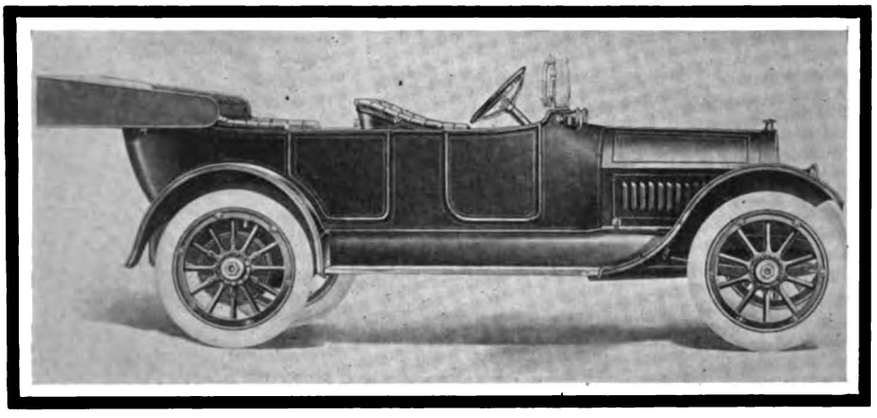
For the first time, a bumper has been made a part of the regular equipment of the Pierce-Arrow car; the Sager bumper is fitted. One of the new Pathfinder models also is equipped with a bumper.

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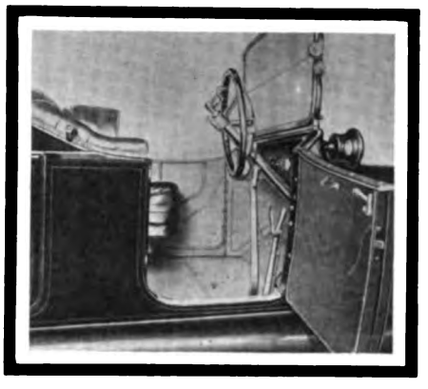
CADILLAC TWO-GEAR AXLE HAS ELECTRICAL CONTROL

Button Control of Drive Ratios Principal Feature of New Series Cars — Tilting Steering Wheel and Cushions, Too.

First reports regarding the adoption of radical construction "behind the dash" for the newer series cars produced by the Cadillac Motor Car Co., of Detroit, Mich., were correct, after all; it will be an electrically-shifted two-speed rear axle and not a transmission gear-shifter, as later and apparently trustworthy reports made appear. This almost revolutionary change, briefly, constitutes the chief element of newness in the new crop of cars that now are coming through the factory, for though there have been a number of other minor changes made, and equipment has been increased, none of the alterations are of a really significant character; prices remain the same.



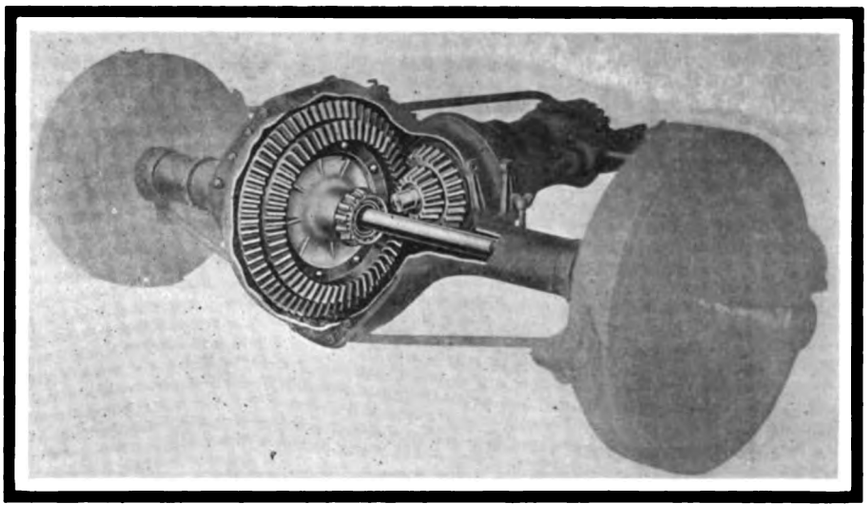
STANDARD CADILLAC TOURING MODEL WHICH SELLS FOR $1,975



CADILLAC TILTING STEERING WHEEL

In adopting the two-speed rear axle, the Cadillac company has made what amounts to a serious attempt to reduce fuel consumption, and it is an attempt that bids fair to accomplish its ends. In place of the usual single bevel drive there are two bevel drives, one of them giving a final gear ratio of 3.66 to 1 and the other a ratio of 2.5 to 1. The lower gear ratio, it will be appreciated, is particularly suitable for city driving or for use on rough roads where the maximum of flexibility without the necessity for shifting transmission gears is desirable; and for driving at greater speed in the open country and where the roads are fairly good the higher gear can be called into use by the simple depression of a conveniently located button.

Just what saving in fuel consumption can result from the arrangement can be better appreciated from the statement that the high gear ratio permits a 42-per cent. increase in the speed of the car for a given number of engine revolutions to the minute. Thus, for instance, with the engine turning 700 revolutions to the minute, the speed of the car on the lower of the two gears will be approximately 21 miles an hour; with the higher gear ratio in use, on the other hand, the speed of the car, without any increase in engine speed, will be approximately 30 miles an hour. Consequently, in a given time, and without any alteration in engine speed whatsoever, the car will travel considerably further when running on the higher gear than it will on the lower one. This feature, which is a vital one what with the comparatively high cost of fuel, is in addition to a substantial lessening of wear in the parts due to their slower speed when the high gear is used, and also results in considerably lessened engine vibration at high car speeds. The arrangement of the bevels, which is beautifully simple, is shown quite clearly by the accompanying picture, which also makes plain that the axle is of Timken construction.



CADILLAC TWO-GEAR DRIVING AXLE WHICH IS ELECTRICALLY CONTROLLED

To start at the radiator of the newer Cadillac and "read" it back to the rear axle, reveals very little that is really new. The engine, for instance, is the same copper water-jacketed four-cylinder machine it always has been and the bore and stroke, which are 4½ and 5¾ inches, respectively, remain the same; the piston displacement therefore is 365.8 cubic inches and the A. L. A. M. rating, 32.4 horsepower, though needless to add, the rating is considerably exceeded and without any difficulty at all. Water is circulated through the copper jackets by means of a centrifugal pump and cooling is assisted by a light fan running on two-point ball bearings and having an adjustable belt drive. The radiator is of the tubular plate type. Oiling is by splash, constant level in the crankcase compartments being maintained by a positively actuated pump.

In the electrical apparatus of the car—both ignition and lighting and starting—several important alterations have been made with a view of increasing efficiency. The Delco system furnishes all the current that is used on the car, of course, and in the ignition portion of the apparatus an improvement has been made in the adoption of a dual system in which only one set of plugs, sparked either by current from the

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storage batttery or from dry cells, is used. There is one high-tension distributor, and both automatic and manual control of the spark advance is provided for both systems. All the switches for ignition, lighting and starting are contained in a single switch housing, and one lock is provided which locks all the switches simultaneously. The lighting switch can be locked in any position desired.

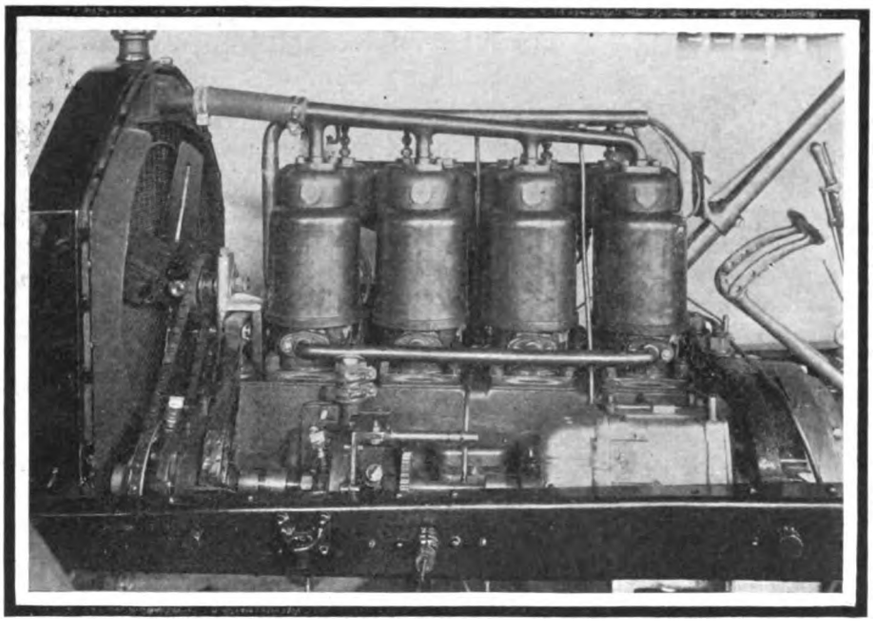
In the lighting and starting equipment two noteworthy alterations have been made, not the least important of which is a material increase in the cranking speed of the electric motor. Probably the next most important change is the substitution of a single-wire circuit for the double-wire circuit that has been used in the past. By this means the wiring has been materially simplified, only half the amount of wire now being required that was needed under the old regime. Also, there now is an automatic temperature regulator on the voltage regulator, and this, with the cut-out relay, and the battery ignition relay, are contained in a box attached to the forward side of the dashboard under the hood.

The controlling switch on the generator has been eliminated and its functions now are performed by one of the brushes which is so interconnected with the clutch pedal than when the pedal is depressed to bring the cranking device into action the brush is brought into contact with the motor commutator and is removed from it when the clutch is released after the motor has started. When the brush is brought away from the commutator, auxiliary contacts are closed which bring the battery charging generator into operation automatically. Another electrical device that has been added is an electrically heated vaporizer in the carburetter to facilitate starting in cold weather. Incidentally, the poppet type air valve has been replaced by a swinging type valve and the special auxiliary air inlet has been eliminated as unnecessary.

Further along in the chassis, the clutch is of the usual cone type with large surface and heavy leather face. The whole assembly is readily removable. The gearset is of the sliding selective type and provides three speeds forward and reverse, which, in conjunction with the two-speed rear axle, permits no less than six forward gear ratios. Drive is through the orthodox shaft and two universal joints, the after one being telescopic. Brakes are internal and external, mounted on rear wheel drums measuring 17 x 2½ inches, and both sets are carefully equalized. The frame is a pressed steel channel section mounted in front on semi-elliptic springs and in the rear on the distinctive Cadillac three-quarter platform member; the rear side springs, however, have been lengthened six inches. Wheels measure 36 inches in diameter and are shod with 4½-inch tires on Q. D. demountable rims; the wheelbase of the standard car is 120 inches. The gasolene tank now is carried at the rear axle and fuel is fed under pressure by means of a pump attached to the crankcase and driven from the camshaft.

In appearance, the car is much like its predecessors, except that it is driven from the left side—all previous Cadillacs have had the steering wheel at the right side—with the control levers placed in the center of the footboard. The steering wheel itself, by the way, is different from anything else of its kind; it is hinged and may be turned down, parallel with the steering column, to permit easy entrance to the driver's seat; also to remove obstruction, the right side front seat upholstery is hinged and may be turned up out of the way of entering passengers.

Seven bodies in all are supplied on the single chassis; they are five and seven-passenger touring, roadster, four-passenger phaeton, three-passenger landaulet-coupe, five-passenger inside-drive limousine and seven-passenger standard limousine. The equipment includes top, windshield, lamps, gasolene gauge, speedometer, tire irons, tools, etc., to which has been added an electric horn and a power-driven tire inflator. Prices of the various models are as follows: Five-passenger touring, phaeton and roadster, $1,975; landaulet coupe, $2,500; seven-passenger touring, $2,075; inside-drive limousine, $2,800; and standard limousine, $3,250.



CADILLAC ENGINE SHOWING POWER PUMP AND DELCO SYSTEM

Correja Develops "Six"; Abandons "Fours."

Marking the entry of still another manufacturer into the popular-priced six-cylinder field, Vandewater & Co., of Elizabeth, N. J., who produce Correja cars, has let it be known through the Thomas Howard Co., of Brooklyn, N. Y., which markets the entire Correja output, that a "six" to sell with complete equipment for $1,800 has been developed for the coming season.

The new car will have cylinders measuring 3½ x 5 and cast in blocks of three with the valves located on opposite sides and enclosed. Power is transmitted through a cone clutch and three-speed selectively operated gearset mounted on the rear axle. A low-sided body with underhung three-quarter elliptic rear springs combine to give a rakish appearance that is accentuated by the rear location of the gasolene tank and spare tires; the wheelbase is 125 inches. Two sets of brakes are provided, both on rear wheel drums and both equalized, and an ingenious and simple adjusting ratchet is provided. The list price of the car, which will be the only one to bear the Correja name-plate, includes a silk mohair top and windshield and other usual equipment. The Jesco electric lighting and engine starting equipment is regularly supplied at an advance of $100 in the price.

Apple to Establish Chain of Branches.

In addition to those already established, the Apple Electric Co., of Dayton, Ohio, is making ready to increase its chain of Aplco service and installation stations until all of the principal cities shall have been included. The stations will carry complete stocks of Aplco lamps and lighting and engine starting systems and will be equipped in every way to install or repair those devices.

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"BOOSTING" ONESELF AT THE BOSS'S EXPENSE

Reilly Dilates Upon the Unfairness of Advertising the Employe Through Publicity That Costs the Manufacturer Good Money—Publicity Men Who Hold the "Big Stick" Over Newspapers—or Try to.

Tom Meck, being now in charge of a Western sales district for the Sales Manager, was by habitat a Westerner and, therefore, as all Westerners do—the story-book kind, at least—whenever he went anywhere he "breezed." Wherefore, late in the afternoon he "breezed" into the town where



MECK SOUGHT AN ALCOVE AND A DEEP LEATHER CHAIR—AND WAITED

Reilly made his accumulation of shekels each year, "breezed" into the hotel and promptly at 6 o'clock "breezed" into the dining room.

But he wasn't "breezing" now. With a satisfying dinner under his monogrammed belt buckle, a soothing cigar alight and his straw sailor tilted just a trifle backward, he emerged from the dining room, and as he entered the lobby he may be said to have "tiddrummed." He had run down from the factory to visit his one-time employer, Reilly, and had arranged to meet the dealer in the evening at the hotel. Meck sought a quiet alcove and a deep leather chair—and waited.

In Reilly's tour of the lobby in search of Meck the dealer encountered Charley, the automobile man on the News, who was hunting out tourist stuff, and the two were still together when Reilly spied Meck. After those characteristic greetings which are supposed to follow a long period of separation, the trio went back into the alcove and talked—about nothing in particular, but just talked.

While Reilly and Meck were talking, something that was said seemed to stir something in one of the alcoves of the newspaper man's mind and, drawing a handful of papers from an inside pocket, he selected one and at an interval in the conversation of the two old friends asked, "Do you fellows know Loren K. Swedener?"

"Lorry the Swede," replied Meck.

"Sure!" exclaimed both Reilly and Meck in unison.

"Quite a man, isn't he?" suggested Charley, who continued to peruse the flimsy sheet he had unearthed in his pocket.

"Oh, more or less," responded Reilly.

"With the emphasis on the less," laughed Meck. "Why? What now?"

"I thought he must be quite a man from the amount of paper and postage that's devoted to him; he's been made a something-or-other in the Prince factory, and now he's appointing publicity men and various other things," explained the News man, who handed the flimsy sheet to Meck.

Meck read it, and smiled. He handed it to Reilly, who read it, and smiled also. Reilly handed it back to Charley, who put it in his pocket, but didn't smile.

"Well?" he ejaculated when no elucidation was forthcoming. "What's the joke? Quit grinning and open up! Is this man a joke, or what?"

"No," slowly responded Reilly, flicking the ashes from his cigar, "Lorry isn't a joke; he's——"

Specifications of "Lorry the Swede."

"A slap-stick comedian," supplied Meck.

"Just about that," agreed Reilly. "He certainly has gotten a lot of publicity in his day—much more than has been accorded to men who really are worth it. He's quite a card in his way."

Meck continued to chuckle to himself as if at remembrances, and Reilly continued: "There are a number of men in this and various other trades who are built from his specifications; they sound well, but that's a large part of all you can say about them."

"What's his pedigree?"

"Haven't you received it yet?" asked Reilly.

"I suppose I have," answered the newspaper man, "along with photographs and cuts and so forth, but life's too short to read all that bunk."

Had Great Desire for the Limelight.

"Well, I don't know where he started in business, but I'll guarantee he arranged to get his name in the paper the day after he was born. The first I knew of him was five years ago, when he was made assistant sales manager for the Burley Accessory Co.—and everyone else heard from him about the same time. After he was installed in a little office in their establishment he proceeded to form an alliance with the advertising manager and frequent interviews began to appear. They were all written by the advertising manager, but were accredited to Swedener, and a lot of them were printed, for the advertising man could turn out real clever stuff. He made Swedener say things that Swedener never thought he knew before.

"Then he made a jump and got a job as sales manager of a little automobile concern down East and straightaway he sent out a story to the effect that Loren K.

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Swedener, formerly so-and-so, and so-and-so, had accepted a position as manager of this company. He apparently convinced the company they needed a publicity man, for shortly there appeared a story to the effect that Loren K. Swedener, manager of the whatever-its-name-was company, announced the appointment of whatever-his-name-was as publicity manager. It sounded just as if Lorry was the whole works down there.

"He apparently bulldozed everybody about the place, and the Swedener publicity kept going out in reams. It was Swedener this and Swedener that, and although he was drawing his living from the company, the company was a very minor item so far as newspaper mention was concerned. To read the papers it sounded as if Swedener was carrying the whole burden on his own shoulders and that without him the company would immediately slump off into nothingness. He——"

Not a Pause in Reilly's Dissertation.

"Come up to the room," interrupted Meck. "It's cooler up there."

"The three arose and entered the elevator, but Reilly never even stopped talking. He did stop an instant to remark. "It is cool up here. isn't it?" as they seated themselves in the breeze which drifted in from over the green trees and parks of the city's west side. Meck telephoned for three bottles of beer as Reilly went on: "Well, then Lorry had a couple of other jobs and, while I don't get my information from the men he worked for, I have it pretty straight that he isn't so much of a success as he would have people believe."

"It certainly looks bad when a man has five jobs in four years," commented Meck.

"Yes; it may be an honest upward step every time. but it does look bad. And now he's gone with this Vermont company and is still up to his old tricks. That story you have, you will notice, doesn't say he has appointed a publicity man, but says he announces the appointment, which means that the company probably hired the man, but that Lorry is making the thing an opportunity to get himself into the limelight. He has gotten himself in bad on numerous occasions by boosting himself and keeping the company in the background."

How the Publicity Man is Bulldozed.

"What makes the publicity man do it?" asked the News man.

"The poor little publicity man isn't to blame," replied Reilly. "He is out to make a showing for himself by getting as much stuff printed as he can, and Swedener tells him what a great man he is and persuades the press agent into believing he can pad his space average by using the name of Swedener. 'because it is so well known and he is liked by the newspapers.' "

"He's nearly as bad as the man who once asked me to use his name every time we said anything about the company he worked for," rejoined Charley.

"I should say that was very near the limit," said Meck.

"But you should worry," said Reilly. "The poor publicity man is the one who has his troubles. All you have to do is to print his stuff or throw it away, just as you please, so long as you get your column filled every day."

"Oh, sure! This is a fine young job I have," exclaimed the automobile writer. "Nothing to do but fill a column every day; no troubles, no worries, everything smooth sailing. Huh!"

"Huh what?"

"I'd like to have you do my work for



"HE HAS GOT IN BAD BY BOOSTING HIMSELF," REMARKED REILLY

about a week—you'd change your mind," said the News man. "I know all about this publicity man business; I had a little whack at it myself once. I know the poor press agent has his troubles, but that's no reason why we should give his boss a lot of free advertising. Giving a manufacturer a bunch of free publicity out of sympathy for his publicity man is like giving to one of these crippled beggars who are part of a syndicate and are working for some able-bodied man.

"It makes me sore, too, the way the publicity and advertising men try to club us into giving space to their dribble and drool. Their favorite stunt is to make their paid advertising contingent upon the amount of free publicity they get in a certain paper—at least, that's the gentle intimation they are always making. A newspaper in the eyes of an out-and-out publicity man is gauged by the number of lines or inches he can fill for nothing in the course of a year; the real advertising value of the paper is nothing at all to him; he is out to hold his job and make a showing, and if he can carry a little report in to his boss and say 'I got so many lines of publicity this year,' that's all he cares about, and if some of the publicity soft-soaps the boss in the right vein, he isn't unlikely to share the belief that the sheet is a great paper."

"But do they run their advertising in the papers that print their publicity?" asked Meck.

Fallacy of Running Publicity Stuff.

"There's where the rub comes; sometimes they do, but usually they don't. An advertising manager, if he is worthy of that title, knows what papers are good and what papers are not, and since he is out to get the biggest possible return from the money he spends for advertising he is going to buy space in the paper which is the best for his purposes, regardless of whether it uses his publicity man's stuff.

"How do you work your end under those conditions?" asked Reilly.

"There's only one way. That's to print only such stuff as is worth printing, regardless of who sends it out, and to plug for all the advertising we can get; we sell our advertising on our merits and do not ask it as a favor. We've got a paper that is a red-hot advertising medium, and when we can't sell on that basis we would rather not sell. Of course, during show week or on some special occasion, if a man is going to use an extraordinarily large amount of paid space we often, but against our will and best judgment, will run a little of that bunk stuff. You may be surprised to know, too, that the men who are spending money for advertising think more as a general rule of the paper which dodges these rotten handouts than they do of the paper that caters to them by running a lot of publicity that nobody reads.

The "Ad" Man's Gentle Insinuation.

"Now, take this Swedener handout; there's a small item of news in the fact that a new publicity man has been taken on, but just why we should drag Swedener into the thing is more than I can see. With the handout came a letter saying that they would appreciate our running the stuff and that when they make up their advertising appropriation they would be pleased to consider our publication. That's what they all say. Well, I've got to beat it, men; this'll never get me a column of tourist stuff."

"He's right, all right," said Reilly after the News man had gone.

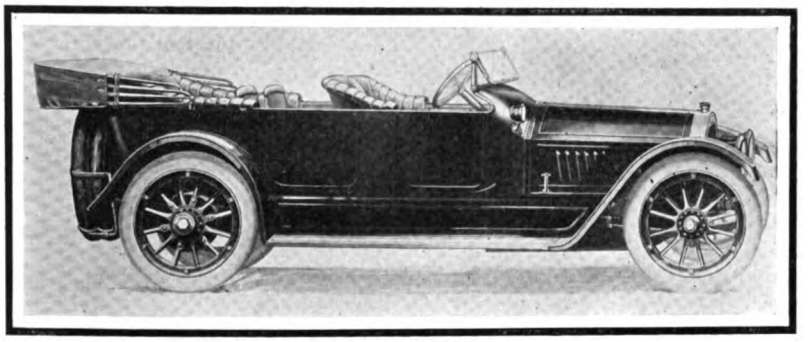
"He's right enough," replied Meck, "but we all have our troubles. Even Andy Carnegie is having troubles trying to die poor."

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LEFT STEER AND MORE POWER IN COLE FOURS AND SIXES

Few Important Changes, but More than a Few Improvements—New Line Consists of one "Four" and One "Six."

Two or three changes that are of considerable moment and a host of betterments of less import combine to make the Cole cars of the latest series not a little more attractive, more convenient and, generally, more "worth while" than their predecessors, despite the fact that the prices are practically unchanged and that in general design and their larger aspects the machines are still wholly and unmistakably Coles. This is made evident by the details of the new models just presented by the manufacturers, the Cole Motor Car Co., of Indianapolis, Ind., and more than ever is "the standardized car" to be made the Cole slogan.



COLE SERIES NINE SEVEN-PASSENGER TOURING "SIX"

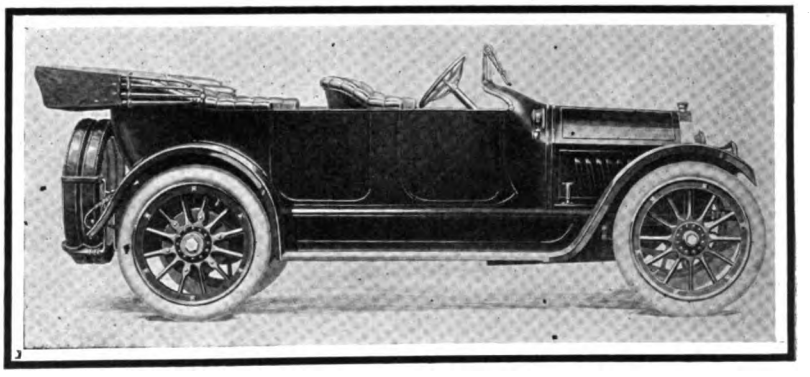
Two models comprise the series—that is to say, two chassis models, on which the usual variety of bodies is mounted. One chassis mounts a four-cylinder motor and the other a six, as in the past, the motors being the product of the Northway company. In both cases, however, the cylinder dimensions have been increased from 4⅛ x 3¾ to 4¼ x 5¼, the object and the result being obviously a substantial increase in power developed. And now the Cole car is a left-steered car, which it was not before, while the three-speed selective gearset is controlled by a centrally located lever. Three inches has been added to the wheelbases of both models, making the lengths 120 inches and 136 inches, respectively, for the "four" and the "six." On both jobs the tires are 4½-inch, but in the case of the smaller car they are 34 inches in diameter as against 36 inches in the "six."

Pumping up a 4-inch tire is bad enough, but filling a 4½-inch tire is worse, which may account, partly at least, for the fact that the cars now are equipped with a Noil diaphragm air pump, gear-driven from the pump shaft and located at the front of the motor. The Warner speedometer drive has been removed from the usual location on a front wheel and placed just back of the gearcase, where the flexible shaft receives its drive from the tailshaft through spur gears—an arrangement that eliminates the trouble that is not uncommon when the drive is taken from the front wheel.

Among motor refinements the adoption of tungsten steel for the valves is indicative of the alertness of the manufacturers to the importance of "the best there is" for such parts, and a newly designed exhaust manifold of flattened form is given credit for a substantial decrease in the back pressure of the exhaust gases. Evidently believing that what usually is concealed under the hood ought to be attractive in appearance when the hood is raised, the motor builders have finished the engine "trimmings" in nickel, which matches the nickel finish of the bright metal parts of the whole car.

The comfort of the occupants of the car has been assiduously attended to in past models, and not a great deal has been left for improvement. However, by making the springs a trifle flatter and a little longer in the rear suspensions of both models an improvement in riding qualities has been effected, and while the fact that the upholstering is done in a particularly fine grade of long-grain leather may not make the seating any more comfortable, it has a soothing effect on the mind and also appeals to the eye, to say nothing of its wear-resisting qualities. And while nothing has been said anent the possibility of extending business among persons of unusually ample lateral dimensions, the fact remains that all doors have been made wider by four inches—which fact speaks for itself.

Tops now are of pantasote, with Collins curtains which roll up inside, and the windshield arrangement is something at which the Cole people "point with pride," for that useful accessory is solidly built into the bodywork and neither is nor has the appearance of being an "attachment." All braces and other excrescences are eliminated and, moreover, the windshield supports serve to brace the front end of the top when it is raised, dispensing with the long and more or less ungainly straps often employed. The top of the cowl has been extended backward sufficiently to form an effective protection for the instrument board, which, incidentally, is finished in a dull, ebony-like black that throws into fine relief the nickeled trimmings of the instruments. The "built-in" principle has been extended to the lamp brackets, fore and aft, and to the tire brackets at the back of the car, the general effect being one of completeness that is decidedly attractive. The big Janney-Steinmetz steel gasolene tank is more substantially hung than ever in the rear, the extended frame ends forming strong brackets to which the heavy steel straps are anchored. The fittings which serve as the tank anchorages also provide means for the attachment of the tire brackets.



NEW COLE SERIES NINE FOUR-CYLINDER TOURING CAR

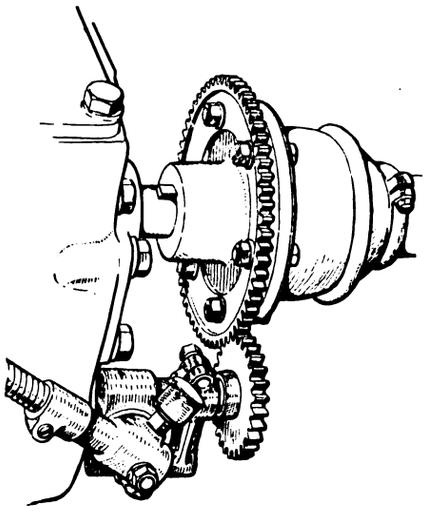
No little trouble has been taken in improving the body work, both as to appearance and as to its more utilitarian aspects, and there are slight changes in the lines, which are insufficient to alter the characteristic appearance of the car but still are

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recognizable as improvements. The hood rests on aluminum sills. Underpans no longer are attached to the body, but are fastened direct to the frames.

The main features of the car, which remain unchanged, are of standard design in all cases, there being no attempt to build a car around any one idea. As already has been said, the motor is of Northway make, and it carries also the three-speed gearset with connecting clutch of the leather-faced cone type. The unit power plant is hung on a three-point suspension, two points in the rear and one in front. The circulating water is cooled by a Mayo cellular radiator. The propeller shaft is provided with Spicer universal joints and drives the rear wheels through a Timken axle; the front axle also is of Timken make. The steering gear is the Gemmer.

While the motors of the two models are alike not only in the matter of bore and stroke but also in general design, there are, of course, differences that are due to the

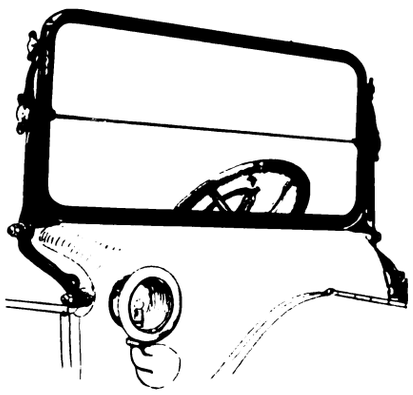


COLE SPEEDOMETER DRIVE

difference in the number of cylinders. The bigger motor has four crankshaft bearings, while the smaller has three. On the four-cylinder motor the camshaft is driven by helical gears, while, as before, Coventry "silent" chain drive is employed for the camshaft of the "six," the chain being made of such width that exceptionally long wear is anticipated for it. The camshafts have the same number of bearings as the crankshafts in their respective engines—three in the "four" and four in the "six." In both motors the lubrication system is of the pump-circulating variety, with constant level splash; the oil reservoirs have capacities of 9 quarts and 12 quarts for the smaller and the larger motors, respectively, sufficient for long runs.

The oil pumps are fitted with adjustments so that the flow of fuel can be regulated, and a sight-feed on the instrument board shows at all times the activity of the oil circulation.

Quiet gear changing is facilitated by the fitting of a leather-faced brake on the rear end of the clutch hub. A refinement in the gearset is the employment of a roller bearing where the primary gear shaft and the clutch shaft extension run together. In place of the squared sliding gearshaft formerly fitted, there now is a castellated shaft, which offers a better wearing surface and tends to prevent looseness after the car has been in use for some time. The fact that there is only 6⅝ inches of the secondary



BUILT-IN WINDSHIELD AND LAMPS

gearshaft between bearings insures the requisite stiffness in this member.

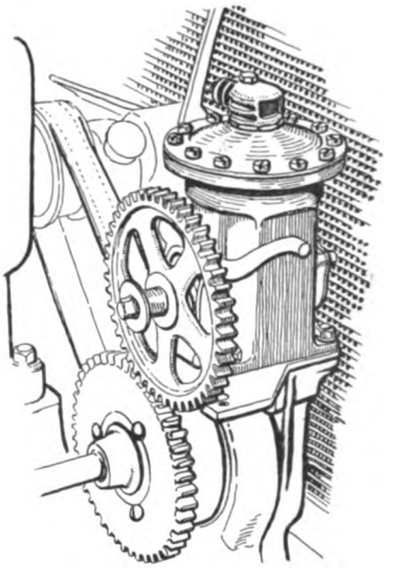
Double drop frames of similar design are employed for both models, with the obvious differences called for by the differences in the sizes and weights of the respective cars. Both are of the double-drop type, permitting reasonably low hanging of the bodies. In the case of the "four" the frame is 4 1/16 inches deep and of the "six" 5 inches.

In the matter of equipment, which is the same for both cars, no trouble seems to have been spared to leave nothing undone. The ignition, motor starting and illumination system is the Delco. The ignition timer is fitted with a governor which automatically varies the timing to suit the speed of the motor; the usual hand control is also fitted, however. In order to provide ample current for ignition purposes when the storage battery voltage is pulled down, as it may be by starting a half-frozen motor in frigid weather, a supplementary battery of dry cells is provided, a two-way switch permitting instant change of connection from one to the other. The storage battery is accessibly hung under the front footboards. In addition to the ignition and lighting switches, the instrument board carries the air pump for the fuel pressure, and the air gauge, the oil sight-feed, the Warner speedometer and eight-day clock, and on the right side there is a little door with a Yale lock which gives access to a convenient box for gloves and goggles—a convenience that may well be appreciated. The Delco electric horn is sounded by a button placed on the top of the steering column. A pedal is provided for operating the engine starting system.

All Cole cars take the standard finish, which is a very dark blue for body and wheels, with black and ivory hair-line striping for the frames, fenders, hubs and body mouldings; the windshield framing also is black, as well as the mudshield which projects beyond the radiator at the crankless front end of the car.

It is perhaps unnecessary to add that the cars carry the usual complete outfit—and perhaps a rather unusually complete outfit—of tools and so on; a drawer under the front seat provides a convenient place for the storage of the tool equipment.

Three body types are provided for each chassis. The "four" may be had as a roadster, a four-passenger or a five-passenger



NOIL PUMP AND DRIVE ON COLE

touring car, and the "six" as a roadster, a six-passenger tor a seven-passenger touring car. The "four" costs $1,925 and the "six" $2,600, with any open body. As a three-passenger coupe the "four" costs $2,350 and the "six" as a four-passenger coupe, $3,000, and as a seven-passenger limousine, $4,000.

Valve Pin that May Cause Trouble.

There is nothing much more mysterious or baffling than a tire which gradually loses its air, though it is positively known that the tube does not leak and that the valve is in good shape. But there always is a reason for such things, and one reason for loss of air may be that the pin in the tire valve is a shade too long, so that when the cap is screwed on it makes contact with the pin and pushes the valve off its seat. Filing a little off the end of the pin is all that is necessary to end the loss of air.

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WESTERN GOAL IS NEARED BY "INDIANA MADE" TOURISTS

Dust-Stained "Boosters" Reach California After Alternate Baking and Freezing—Still Have Eight Hundred Miles to go.

Those "boost Indiana" tourists who left Indianapolis on the morning of July 1st are nearing their California goal; already they have covered some 2,700 miles—2,734.4, to be exact—and to-day (Thursday) they shake the dust of the State of Nevada, through which they travelled for three days, off of their hind wheels and for the first time set eyes on the soil of California. To-night they rest at Lake Tahoe, where they will be met by the Governor of the State, and henceforth their trail will lead over California roads and by-roads straight to the city of Los Angeles, where they are due to arrive some time on Saturday, August 2nd.

The experiences they have had so far en route would fill a book, and the speeches that have been made by Fisher and Bookwalter and W. S. Gilbreath, in the interests of the proposed Lincoln trans-continental highway would fill a much larger book; it is likely, too, that the nice things that have been said about Indiana products, and about Indiana-made automobiles, in particular, would fill another book; which is as it should be, for the tour has been made primarily to "boost" Indiana-made cars, and besides, many of the cars deserve all the nice things that could be said about them for the way they have negotiated the roads and so-called roads and near-roads their drivers have aimed them at. A glance at the accompanying pictures will make that fact plain.

As far as the cars that are making the trip is concerned, not one of them has met with serious difficulties as yet, though the Sierras that lie between them and their goal are viewed with trepidation by the drivers, who already have had ample experience in mountain climbing and the vicissitudes that go with it—the latter meaning rough passes, scarcely wide enough, precipitous ascents and descents, and a succession of bumps and jolts calculated to wear down any but brave spirits. On one of these mountain roads, the Brown truck that is carrying luggage and tires is said to have stripped one of its gears because of the tremendous load it is carrying; but it is continuing nevertheless and at last accounts was only a day behind the caravan and fast making up the time lost for repairs. Which, briefly, is the only mechanical trouble that has assailed the tourists.

But if they have had no mechanical troubles they have had troubles enough of other kinds to make up for the discrepancy—or, rather, that fortunate circumstance. They have been alternately baked on the plains, stifled with dust and sand, marooned in the mud and frozen in the mountains. Leaving Salt Lake City, every one of the cars was festooned with five-gallon canvas desert water bottles against the long dry seige between that interesting city and Kearney's Ranch, which was the last telegraph and telephone station they encountered before they reached Ely, Nev., on Monday night, 21st inst. Kearney's Ranch is a tiny little cattle station far in on the desert and 25 miles south of the Nevada State line.

Dust probably has caused the tourists more inconvenience than has anything else and it has not always been as easy to get a bath now that real civilization has been left behind.

In the long mountain climbs that have been made, radiators have steamed merrily, and when the tourists have reached the top of five-mile grades averaging from 15 to 22 per cent. they have not been as hot as their motors. Up there in the mountains the snows remain the year around, the atmosphere is decidedly chilly and coats and wraps discarded on the burning sands hundreds of feet lower down were more than ordinarily welcome. Snowball battles became comparatively common, and when the drinking water ran low it was a simple matter to melt snow on hot radiators. Just what the tourists have encountered on the trip is told better by the pictures than ever it could be told in words.

As the drivers reach out in the desert, the price of gasolene goes steadily upward to 50 cents a gallon and then to 60, and it went even higher in some parts of Utah. But this is not troubling the drivers of the two Henderson cars that are making the run on kerosene; so far one of them has used 94 gallons of coal oil purchased at country grocery stores at from 14 to 25 cents a gallon in the mountains; near the larger cities the price has been 11 cents. For 1,875 miles the total fuel bill was but $11.75, including 90 cents worth of lubricating oil. The Pathfinder car that was started from Indianapolis with a sealed bonnet ran just 1,500.4 miles before a short-circuited magneto made necessary the breaking of the seals, the car then being in the heart of the Rockies.

Although the last leg of the run now has been entered upon and for the next ten days the tourists will roll over California heath, it is not expected by any means that sand-papered boulevards and level stretches reach all the way to Los Angeles. The 805-mile run to the coast may not be as tough as the trail that has been covered, but those who make up the party are not discounting tales of poor roads to come.

Milwaukeeans Offer Race Settlement.

After a delay of nearly a year, it appears that creditors of the Milwaukee Automobile Dealers' Association, which went "in the hole" some $38,500 in promoting the Vanderbilt and Grand Prix races last October, will get about 16 or 18 cents on the dollar, but they will not get it from the association itself, which, it is admitted, has absolutely no funds. The settlement is in the hands of T. H. Spence, of the law firm of Quarles, Spence & Quarles, who, in a letter sent out to all creditors, made it very plain that the moneys to be distributed by him represent voluntary contributions from "some of the members of the association, who, out of a sense of partial moral responsibility for the unfortunate situation, have personally and independently of the association raised a fund for the purpose of distribution among the creditors."

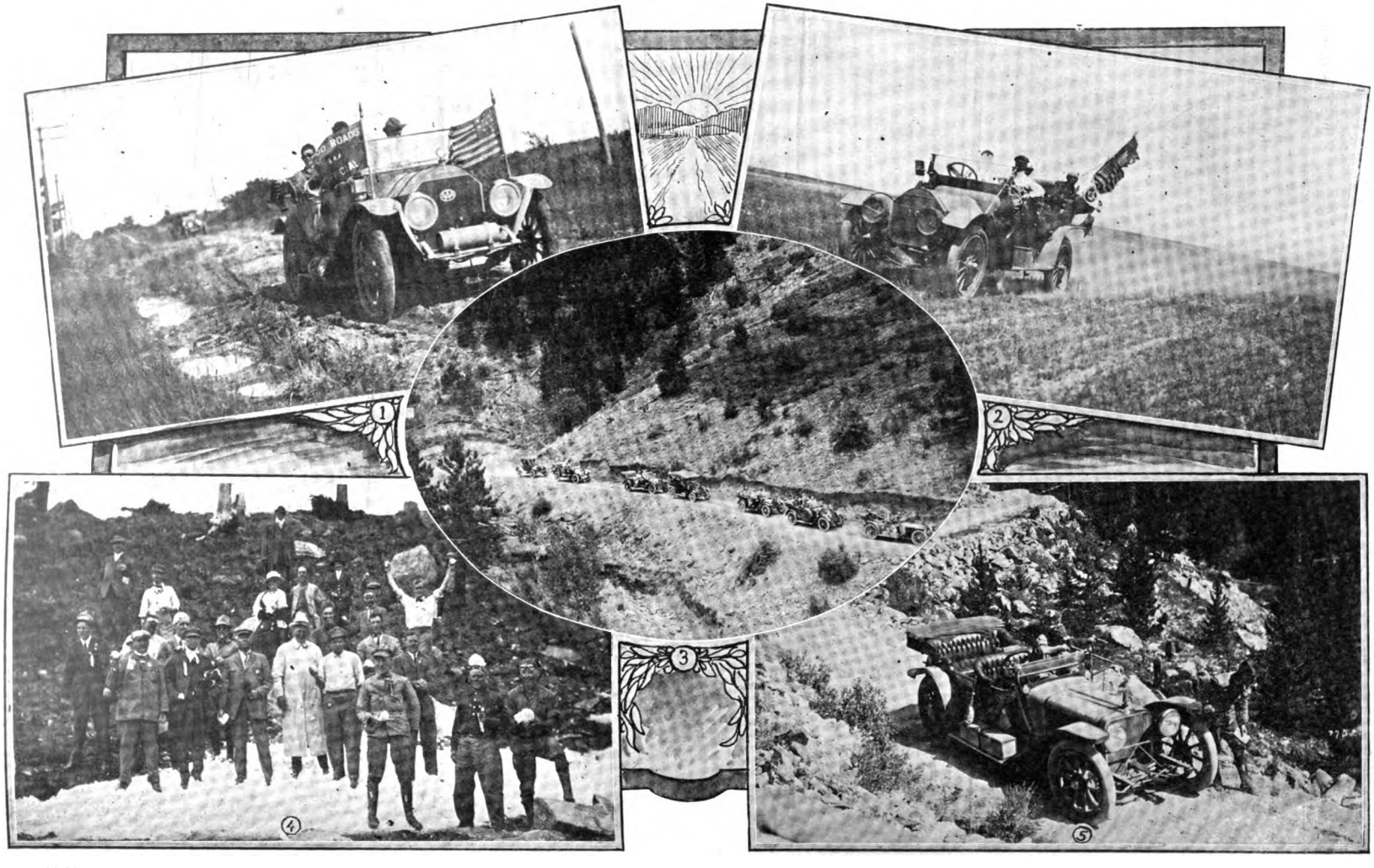
The amount of the contribution made by 15 of the dealers is approximately $7,500. Just what the settlement means to those to whom the association owes money is revealed by Ralph De Palma's case; not only does he lose the first prize for winning the Vanderbilt race—about $3,000—but his hospital and surgeon's bills, as a result of his accident, cost him about $1,000, to say nothing of two months' time. For this he will get about $600 if he is willing to accept it; and if he is not, he will get nothing. Among the other creditors, Starter Wagner has a claim for $1,700, including $900 for expenses, and the association owes Ed. F. Korbell, for press agent services, $250.

Chicago Motor Club Plans Cyclecar Test.

Unless plans miscarry, that part of the United States which skirts Lake Michigan will be the scene of the first reliability tour for cyclecars that has ever been run—if a sufficient number of them can be rounded up. The Chicago Motor Club is the sponsor for the event and the cyclecars will be classed by themselves as a section of that organization's annual "Around Lake Michigan" reliability tour, which is scheduled to start from the Windy City Sept. 8th. As the C. M. C. definition of a cyclecar is the same as the Royal Automobile Club's, it means that only vehicles having engines with less than 1,100 cubic inches piston displacement and weighing less than 784 pounds will be eligible, which leaves a very small field of American cars from which to draw. If the entry list fills, the little cars will be required to travel the same route as the "sure enough" automobiles, but at only 75 per cent. of the speed made by them. The winner will get a cup.

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INTERESTING AND PICTURESQUE MOMENTS IN THE WESTWARD JOURNEY OF THE "MADE IN INDIANA" TOURISTS



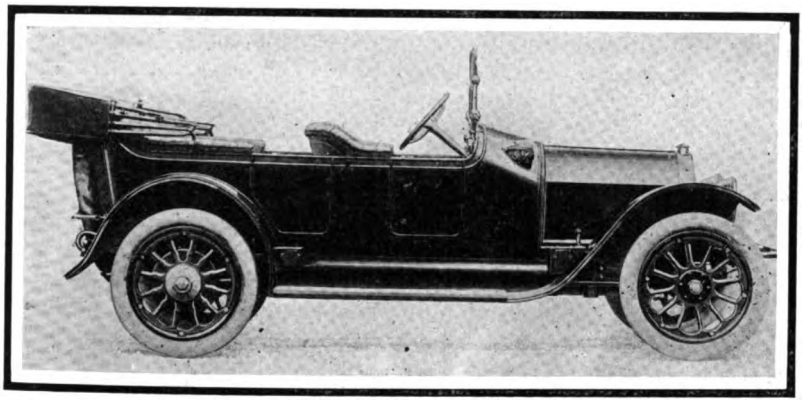
1—COLORADO YET HAS SOME HIGHWAYS OUTSIDE THE BOULEVARD CLASS. 2—ACROSS THE PRAIRIE AT A SPEED OF WHICH THE PRAIRIE SCHOONER CAPTAIN NEVER DREAMED. 3—THROUGH BERTHOUD PASS BETWEEN DENVER AND IDAHO SPRINGS. 4—READY FOR A JULY SNOWBALL BATTLE ATOP THE GREAT CONTINENTAL DIVIDE. 5—HUNTING "MOUNTAIN BEASTS" IN THEIR LAIR

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PATHFINDER STICKS TO TRAIL ALREADY BLAZED

Minor Refinements Only Found Possible—Better Appearance and Better Riding Chief Results—Full Equipment Adopted.

Judging from the specifications that just have been made public covering the latest models of the Pathfinder car, that machine, true to its name, has found a path, and shows little tendency to deviate from it. Which is as much as to say that as the Pathfinder car was, so it is; no opportunity has been found to make mechanical changes in any of its parts, and the manufacturers, the Motor Car Mfg. Co., of Indianapolis, Ind., have done as most other manufacturers are doing—made a good thing better by dint of such small betterments as appear to be required.



SIDE VIEW OF STANDARD MODEL PATHFINDER TOURING CAR

Perhaps the most notable change that has been brought about in the Pathfinder is that henceforth all cars will be sold fully equipped, the regular prices including the full list of those things which the owner must buy sooner or later anyway, and might just as well purchase with the car as afterward. Chief among the things that now form part of the outfit of the car is the Gray & Davis electric lighting and engine starting system, which is installed in the same way as in previous models. In addition to this, and to the usual list of accessories ranging all the way from a top to a tire iron, the newer cars are fitted with bumpers and are equipped with electric horns.

Formerly the various instruments which necessarily are placed under the eye of the driver were placed on the dashboard, under the cowl. Now they have been brought bask to the rear of the cowl, being ranged on a polished instrument board where they are more conveniently seen and more easily reached. On the touring car the tires, which formerly were 36 x 4 inches, are 35 x 4½ inches; the former dimensions are adhered to in the Cruiser, which, however, will be fitted with wire wheels in lieu of wood wheels, if the purchaser so desires, at the same price. Add a slight change in the sweeping curves of the mudguards of the various models and the list of things that are but were not is complete.

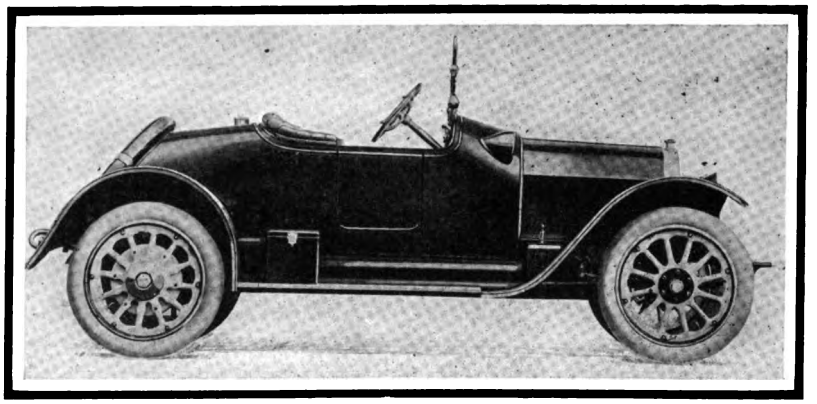
Yet there is one more thing—which, however, will have no effect on the way the car runs. The Pathfinder arrow has been discontinued as a trademark, as already has been stated in Motor World, and its place has been taken by what the makers call "three generations of pathfinders"—pioneer scout, prairie schooner and motor car. The Pathfinder motor, which is a Continental and is rated at 40 horsepower, is of the L-head type with cylinders cast en bloc and a three-bearing crankshaft. The regular dynamometer test registers 42 horsepower at 1,300 revolutions per minute. Lubrication is effected by a constant level pump system, with splash for the cylinders. Helically cut timing gears ensure quiet running, so far as this particular part of the machine is concerned, and, it may be said, the motor as a whole is exceptionally quiet in operation.

The power plant is of the unit type, the gearcase being bolted to the flywheel housing. The gears provide three speeds, selectively controlled by a lever on the right side, the steering wheel, of course, being on the right side also. The clutch is a leather-faced cone. Annular ball bearings are employed throughout the clutch and gearset.

The propeller shaft runs in a heavy torque tube which terimnates, at its forward end, in a fork or yoke which is trunnioned on a cross frame in line with the universal joint at the rear of the gearcase. This form of connection for the torque tube is one which has many adherents, and is quite worthy of them. No radius rods or other retaining or bracing members are required. The rear axle is of the floating type and has a large inspection plate at the rear of the gear housing. The driving pinion is provided with an adjustment which can be manipulated from the outside, compensation for wear thus being made very readily.

The frame, which is heavy and of the double drop pattern, having a "kick-up" at each end, is carried on four semi-elliptic springs, those in front being 38 inches long and the rear springs 50 inches long. The spring shackle bolts are ground to fit accurately in their eyes and are fitted with grease-cups.

A good big steering wheel is provided—it is 18 inches in diameter, with a corrugated rim to afford a good grip, regardless of possible slipperiness—and the steering gear is, of course, irreversible, of the worm and gear type. The gear is of the "full" type—that is, it is a complete wheel, and not a mere segment, so that it can be turned when worn and a fresh, unworn part brought into mesh with the worm.



PATHFINDER ARMORED ROADSTER SHOWING TIRE CARRIER

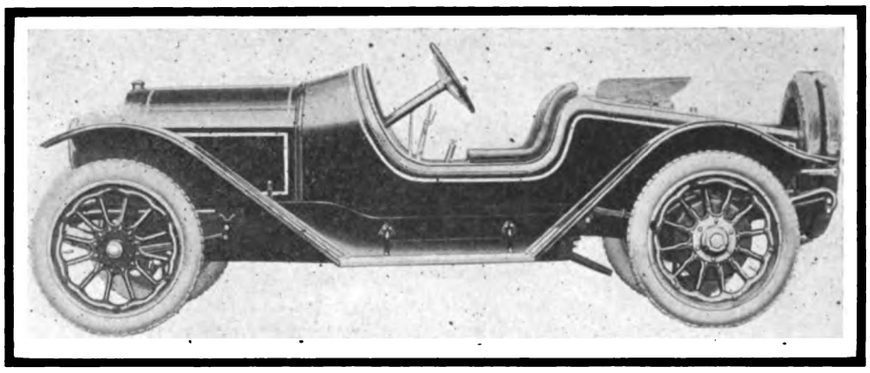
Protection from dust and dirt is assured to the occupants of the car by the employment of sheet metal filling pieces between the running boards and fenders and the

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body of the car. All the working parts are housed, of course, and the car has been made about as thoroughly independent of road and weather conditions as its designers know how—and that is saying not a little.

All bodies are of sheet steel, built on very heavy sills and made with felt-packed joints. The upholstering is done in hand-buffed leather and the padding is of curled hair—genuine hair, and not near-hair, or moss. The cushions are of ample depth, being 10 inches thick, and they are tilted at the angle that has been found most restful to the body. The wheelbase is 120 inches and, on all regular models, the tread is the usual standard, 56 inches. On special order it will be increased to 60 inches, which frequently is required for Southern roads.

All models are mounted on the same chassis and, as heretofore, there are six models — touring car, phaeton, armored roadster, Martha Washington coach, cruiser and delivery wagon, the latter having a capacity of 1,500 pounds.



BOAT-LIKE APPEARANCE OF PATHFINDER CRUISER ROADSTER

English Authority on Future Motors.

Dr. Dugald Clerk, the British authority on matters pertaining to internal combustion engines, has expressed the hope that the future will see the development of new cycles of operation which will result in much higher thermal efficiencies than are possible with present types of gas engines. Dr. Clerk also has hopes of the gas turbine, though he states that so far there is nothing of that kind in existence that can compare with the steam turbine or the reciprocating gas engine for efficiency.

Candle as Emergency Equipment.

While emergency electric lamps are good things, and oil lamps have their uses, on occasion, even on modern cars, there are a few drivers who keep, tucked away in a tight box in a corner of the tool-box, a candle and a supply of matches as a last resort. Such things rarely are needed, but when the necessity for them arises it is likely to be a real, man's size necessity.

HOW ENTHUSIASM WILL WIN WHERE INDIFFERENCE FAILS

"Saying a Thing as if You Mean it" and What it Means in Selling—Sincerity Advised in Big Corporation's Sales Sermon.

Saying a thing as if you meant it and saying it as you said it because you had it to say and wanted to get it out of your system and didn't care much how people took it, are widely variant methods that are pursued in salesmanship; being enthusiastic and being indifferent are the dictionary terms which best apply to these two attitudes, and every salesman should know, if he doesn't know, that the man who is enthusiastic about his work is many times better equipped than is the indifferent man in the struggle for success.

And further, being enthusiastic and trying to act as if enthusiastic are not the same, all of which is the text of a little sermon to its sales organization by the National Cash Register Co., of Dayton, Ohio, in the N. C. R. Weekly.

"Study enthusiasm—its causes and effects," it says. "A man may have all the qualities that go to make up success—but unless he has the ability to enthuse, he may not often command the sympathetic audience that he seeks. Enthusiasm is a big word. It means much in modern business. It is the password that opens the door of prosperity.

"No man can be enthusiastic unless he uses his brain, takes care of his body and looks ahead. No man can be enthusiastic unless he is a true believer in his increasing efficiency. You never saw an enthusiastic man who stood still. Enthusiasm pushes you forward. Indifference drags you down. Enthusiasm springs from optimism. Indifference comes from ignorance.

Some men try to act as though they were enthusiastic. The masquerade fools no one. People see through the bluff and disguise. Contrary to some people's belief, enthusism does not mean lots of noise and bluster. Enthusiasm is an expression of sincerity. Some of the quietest men are often the most enthusiastic. The only man who can really enthuse is the man who thinks, regardless of the noise he makes.

"Be enthusiastic. Stay enthused. Fight indifference. Join the men who do things. Leave the men behind who make-believe. Open your eyes, and you'll see other successful men hurrying along the road of success.

"Enthusiastic men want you to join them and belong to their crowd. If you're unenthusiastic and indifferent, they'll turn a cold shoulder to you. No man with red blood in his veins wants to associate with a half-asleep man.

"You can't yawn in the face of progress—and advance. Progress wants to meet the man alive."

Detroit to Require Fenders on Trucks.

By September 7 every motor truck in Detroit, of one-ton capacity or more, must be equipped with a fender, which, while the ordinary street car type is not specified, must be capable of doing the same kind of work; in other words, the fender must be capable of preventing a person from rolling in under the truck or being rolled upon by the truck should the person be knocked down or fall in front of the vehicle.

The Common Council debated the matter and, holding that accidents of the sort described were becoming entirely too numerous, passed an ordinance requiring the life-saving fender; it is aimed especially to protect children. No particular type was described, this being left to the men who build or operate the trucks. Since the ordinary automobile fender is not designed to perform this sort of work, the Detroit truck men are seeking some way out of the dilemma.

One Frank Larrabee, of Chicago, has already appeared on the scene with a patented safety fender, and it is said to give promise of being satisfactory; the authorities approved it and the truck makers are likely to be obliged to manufacture it under a royalty. The Larrabee fender is said to have been approved also by the Chicago Vehicle Commissioners.

Where Portable Vise May Prove Useful.

An extremely handy thing to have along in the tool-box of the car is a little vise which can be screwed to the running board. The amount of trouble this inexpensive affair can save is astonishing. Special vises are made for car use, with detachable swivel bases that are fixtures on the running board, but for all ordinary purposes the common variety of vise is good enough.

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COUNTING THE COST OF LIGHTING BY ELECTRICITY

Fuel Measurement in Tests Shows Difference With Dynamo Driving —Acetylene Man Talks on Electrical Shortcomings.

It is fair to say that not one automobile owner in fifty fancies that electric lights or electric starters in any way affects the power of his engine, much less the quantity of gasolene that is consumed. As a rule, owners know little and care less of the scientific or engineering side of the question.

But the truth of the matter is that no one ever gets anything for nothing. Everything has to be paid for in one way or another, and the man who uses an electric lighting and engine starting system pays for its operation when he buys gasolene—for it requires gasolene to generate power, and not even the slightest increase of power can be obtained without a corresponding increase in fuel consumption. As to the exact amount of increase, it is a pretty question. A generator turning over without load may take so little power that the increase actually cannot be accurately detected, while the connecting of the wires through the resistance of the lights or of the storage battery may, and probably will, add a load that is easy to determine, at least with a reasonable degree of accuracy. Just to give a rough idea of what may happen, a dynamo that is charging a battery at the rate of, say, 35 amperes and 7 volts will be generating current at the rate of 245 watts, which is the electrical equivalent of, roughly, a third of a horsepower. But as the efficiency of the generator is not 100 per cent.—that is to say, it does not convert into electricity all of the power that is transmitted to it by the driving motor—more than a third of a horsepower must be used to drive. Assuming the efficiency of the generator to be 50 per cent.—and makers claim efficiencies all the way up to 85 per cent.—it is clear that two-thirds of a horsepower will be needed to drive the generator and get the current specified. The power required to generate any given volume of current is fixed and unalterable, apart from the factor of generator efficiency, and may readily be found by multiplying the amperes by the volts, which gives watts, and dividing the watts by 746, which is the number of watts required to equal a horsepower. To this, of course, must be added the increase demanded by the efficiency of the generator.

But, after all, the real measure of the cost of running an electric lighting and engine starting system is the difference between the cost of running a car with and without such a system. And it was with a view to ascertaining what this difference is that R. H. Combs, a representative of the Prest-O-Lite Co., of Indianapolis, Ind., which naturally regards makers of electric sysetms in the light of business rivals, conducted a series of tests on the famous Speedway. The results are given in the accompanying table, which indicates that the maximum increase of gasolene consumption due to the use of the electrical equipment was 12¼ per cent. and the minimum 6.9 per cent. Combs made voluminous comment on the tests, of which the following are the more vital excerpts:

"The result of these tests shows that from 5 per cent. to 12 per cent. of the fuel fed into the engine of an electrically lighted car is consumed by the electrical apparatus. Evidently the 'waste power' theory is in urgent need of revision.

"The method of testing involved disconnecting the main line and attaching to the carburetter a special line and testing can, the bottom of which was so constructed as to drain perfectly. The car under test was first run as far as possible on a gallon of gasolene with the engine connected to the electric generator and the battery being charged, and then with the generator disconnected, another measured gallon was consumed. Identical conditions of passenger load, carburetter adjustment, speed of car, and position of spark were observed and the mileage in each instance as recorded on the odometer was checked against the known mileage of the Speedway. . . .

"Another thing for the motorist to consider is the fact that electric lighting dynamos on motor cars are rated at 25 per cent. efficiency. This means that on this small-sized dynamo, 75 per cent. of the power put into it is wasted. And on top of this the major portion of the dynamo's output is lost before it gets to the lamps, and also through the inefficiency of the storage battery. . . .

"Tests Nos. 1, 2 and 4 in the tabulated report were driven with the headlight and tail-light burning when the electric generator was operating. Test No. 3 was driven with all lights extinguished.

"Test No. 3, involving the flywheel type of generator, was made by disconnecting the wires leading from the generator. In this construction, of course, it was impossible to remove the generator from the flywheel, thereby giving the engine complete relief from the magnetic load on the second part of the test. Something should therefore be added to the percentage shown on this car.

"The car in Test No. 4 has no magneto, and since the storage battery was not deemed sufficiently charged, both sections of this test were driven on dry cell ignition. This report takes no account of any possible weakening of this ignition on the second part of the test with the generator disconnected, the condition of the dry cells being unknown.

"But even ignoring these factors, this report shows an average of over 10.7 per cent. fuel consumption by the electric dynamo on the moderate-powered, moderate-priced cars tested, which cars, by the way, constitute the vast majority of all American cars made and sold.

"And yet these percentages are not large enough to show the exact difference in power and fuel consumption between a car equipped with gas lighting and the same car equipped with electric lighting, because in these tests we were not permitted to relieve the car of the large difference in weight between its electric system and a gas lighting system. The percentages shown were obtained merely by disconnecting the generator so that the engine would not have to operate it. . . .

"It is the standard contention of electric starter manufacturers that the same dynamo and battery which would be needed for lights alone will operate the starter. This we believe is true, and the only allowance for difference in cost in operation should be for the added weight of the starting mechanism itself and for the added wear and tear on the battery.

"These items, however, have little or no connection with the generation of electricity by dynamo. The size of the battery is largely determined by the number of hours of light which it must provide and this, in turn, determines the size of dynamo which is to charge the battery.

"For instance, the discharge rate for two average headlights and one tail-light is between 9 and 11 amperes. Therefore the dynamo must generate close to 14 amperes

TABULATED RESULT OF PREST-O-LITE FUEL TEST

Class of Car.	H.P. A.L.A.M. Rating.	Bore.	Stroke.	Lighting System.	Speed per hr. driving test, miles.	Miles per gallon gasolene. Generator running.	Miles per gallon gasolene. Generator disconnected.	Loss of power due to electrical output.
1 Medium priced..	25.6	4″	5″	Chain driven system.....	20-25	18.6	21.2	12¼%
2 High priced	38.02	4.87″	6″	Same	24	16.5	17.9	7.8%
3 Low priced	25.6	4″	4½″	Fly wheel generator.....	18	21.4	23.6	9.3%
4 Medium priced..	32.4	4½″	5¼″	Lighting, starting and ignition	20	14.8	15.9	6.9%

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if the battery is to be charged at all for the owner who does most of his driving by night and little by day.

"It is hard to draw the line exactly in this matter. We have heard of cases where the car owner who had electric lights and no electric starter, had to run his engine for an hour before he could go out for his evening drive, in order to charge the battery sufficiently. On the other hand, some of the cars on the Indiana Pacific tour have had to burn their lights a few hours each day, in the day time, to keep from overcharging the battery, in spite of the current consumed by the electric starter. . . .

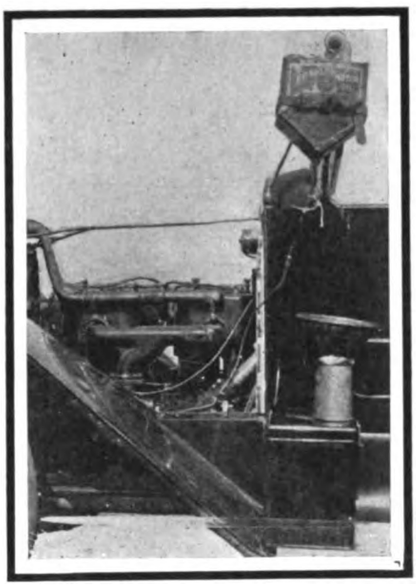
"Our information, gathered from dealers, is that storage batteries used for both starting and lighting are having an average life of less than one year. Batteries used for lighting alone are having an average life of considerably less than two years. We doubt very much if many owners will get two years' life out of the battery, particularly in view of the abuse and neglect which it receives, so that our allowance of two years' battery life in the estimate of electric lighting expense is excessive, if anything. I know of no battery used for automobile lighting which its maker guarantees for more than one year. . . .

"In buying an electrically equipped car, one of the first things the average customer is told is: "Put a little water in the battery now and then. That's all you have to do, and the rest of the system is better off if you leave it alone.

"Somewhere in the side pockets or tool box of nearly every electrically equipped car, there are instruction books issued by the storage battery makers and by the maker of the lighting and starting system. Do these instruction books say, 'Put a little water in the battery and then leave the thing alone'? They distinctly do not. Instruction books would be unnecessary if the care of a storage battery and the care of an electric system in general were as simple as the average customer is led to believe is the case. . . .

"It is a notorious fact that cars in general are getting heavier. True, electrical equipment is not wholly responsible for this, but it is the largest single element in this tendency. It must be remembered that when a motor car maker adds 200 pounds of electrical equipment, he must strengthen the construction proportionately throughout, perhaps putting an extra cross member in the frame, using heavier frames, heavier springs and larger tires, and using a larger engine, not only because of the power consumption of the electrical apparatus, but because of added weight all through the cars. Thus it is that cars which formerly listed at 2,800 pounds are now weighing 4,100 to 4,300 pounds.

"Undoubtedly the purchaser of automobiles is responsible for this condition, but not wholly so. On this point the craze for electric lights is typical. The demand for electric lights on automobiles always existed. And when the dynamo-battery systems made their advent, the public was assured that 'At last we've got it.' The public was overpowered by the alluring prospect of having electric current generated by the engine 'for nothing,' and with practically no trouble, and so the craze for electric lighting spread like wildfire. It can be shown to-day that the public demand was an absolutely unthinking one, based upon almost total ignorance of what the application of this equipment to an automobile really meant. . . .



HOW PREST-O-LITE FUEL TEST WAS CONDUCTED

"The self-starter demand is certain to continue. But the self-starter that will eventually come to stay will not be heavy and will not be complicated, and, above all, it will not be a kind of apparatus that an amateur can easily ruin, either through ignorance or wilful abuse. I know of many automobile factories to-day using electric starters, which are constantly working upon an air starter in the firm belief that one year from to-day compressed air will have displaced electricity in the popular starter demand. . . ."

"Fiscal Agent" Denies Machinery Purchase.

It isn't often that a "fiscal agent" conducting a stock selling campaign does that sort of thing. For that reason, T. S. Sprague, who is serving the Detroit Pneumatic Tire Co. in that capacity, has permitted himself to stand out by printing in conspicuous fashion in Detroit papers an advertisement denying that the Detroit Pneumatic Tire Co. has "already purchased machinery for its factory." He declares that "the statement is not true," adding that it was inserted in one of his Detroit advertisements without his knowledge. He wants it known "that the company has not bought any machinery yet"; and "that it does not have to make any misstatements, because it has a tire and stock which sell on their own merits."

Sprague, as stated in last week's Motor World, is conducting a spread-eagle stock selling campaign in the interests of the Wilson tire, which he heralds as the "final solution of all tire troubles." He is responsible for the statement that Detroiters brought their money to him in such numbers, or in such bunches, that it was necessary to turn late comers away because the days were too short to permit of taking their cash.

Velie Dealers Confer in Tented City.

Conferences of dealers brought about by individual manufacturers, which have become very much the fashion in the trade within the past few years, have taken many forms and been held in many places, but never under more novel conditions than the dealers' conference of the Velie Motor Vehicle Co., which now is in progress. The Velie dealers and sales staff, together with a number of prominent parts and equipment manufacturers, are housed under tents in what is termed "Velie Camp," near Moline, Ill. There are some 200 tents, each occupied by two men, and in addition a big tent in which the actual conferences take place. The two Velie four-cylinder models and the new Velie light "six" are likewise a part of the "big show."

Improvement in Mondex Shock Preventer.

By way of improving the efficiency of the Mondex shock preventer, which is marketed by the Aristos Co., of 254 West 54th street, New York City, the manufacturers of the device have made provision for easy insertion of lubricant between the working surfaces. Removal of a small screw inserted in the head of the king bolt permits grease or oil to be forced along a groove in the king bolt, whence it reaches small grooves cut in the surfaces of the brass planes. Although the shock preventer requires lubrication only about once in six months, the application of grease when needed has been made very simple.

Ford Acquires More New York Real Estate.

Although it only recently added four stories to its Long Island City (N. Y.) assembling plant, the Ford Motor Co. last week purchased the adjoining real estate, a plot 75 x 100 feet. It is Ford's second recent purchase in Long Island City.

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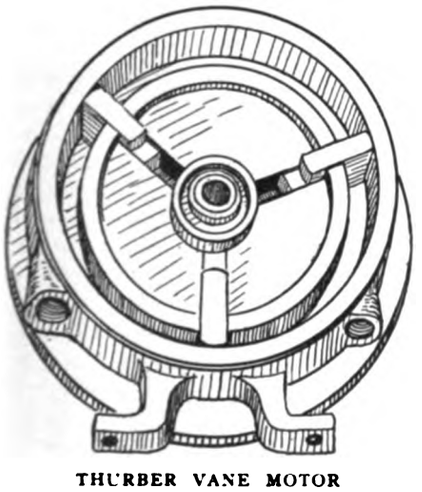
STARTING THE ENGINE WITH COMPRESSED AIR

Construction and Operation of Five Types of Pneumatic Starters Made Plain and Their Care Outlined—Advantages of Such Apparatus—Purposes of "Pop" Safety Valves and Why They Must Be Watched.

With the practical perfection of the electric lighting and engine starting system in all its various forms and its almost universal adoption by automobile manufacturers, other forms of starting apparatus have been more or less overlooked; due to the widespread publicity that has been given everything electrical, little attention has been paid to the possibility of its elimination—not that such action is entirely desirable—except for ignition, of course, and the substitution of something else, perhaps less complex, perhaps cheaper and probably just as efficient. Little cognizance has been taken of the so-called mechanical starter and its advantages have been obscured, rather than overshadowed, by the inherent advantage of the electrical apparatus which is apparent in the easy combination of both lighting and starting functions.



PHANTOM VIEWS SHOWING METHOD OF APPLYING THE THURBER AND DURNO AIR STARTERS



THURBER VANE MOTOR

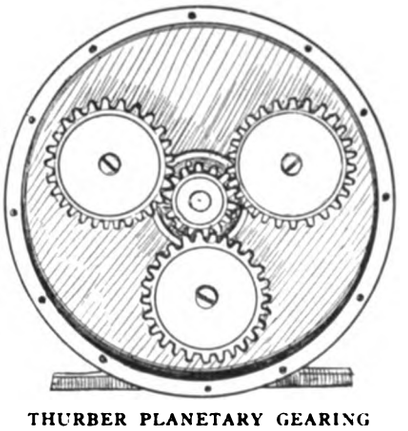
That engine starters of whatever type they may be have advantages there is no gainsaying, for no internal combustion engine is self-starting, and to remove the necessity for manual labor and with it the possibility of injury to the operator as a direct result of such manual labor, is to bring about an advantage. As an engine, the gasolene automobile motor is incomplete; it requires the addition of something that will cause it to start at the will of the operator and with the least possible exertion on his part. And as the completed article, regardless of class, has peculiar advantages over that which is incomplete, so has the motor equipped with a starter, other than the time-honored and almost obsolete hand crank, advantages over the motor that is not so equipped.

Simplicity of Mechanical Starters.

The genuine simplicity of electric lighting and engine starting apparatus was made plain in a series of articles which appeared in Motor World commencing September 26, 1912, and ending May 1, 1913, and in which the construction and operation and the care and repair of all such systems were described and illustrated in a manner never before attempted. Many of the various mechanical starters now available are no more complicated than are the electrical systems covered by that series of articles, though there are few persons who appreciate that fact. In fact, many of them are considerably simpler of attachment to existing cars than are the majority of electrical devices and, if for no other reason, it is meet that their construction and operation, their care and repair, should be better understood.

Obviously, however, it would be impossible to treat of them all in a single article without the danger of making it unduly long and sacrificing clarity and thoroughness to space. It is advisable, therefore, to divide them into classes and to study each class separately, for only in this way can confusion be avoided and comprehensive attention be given all the various systems, of which there are upward of a score.

Mechanical engine starters can be divided into three general classes: Pneumatic starters, spring operated starters, and lever or pedal operated starters. Starters in the first place can be further divided into those in which motion is imparted to the engine through the intermediary of a cable or some such device, as a chain, for instance, running over a pulley or a sprocket on the engine crankshaft with a piston and cylinder to give power; those in which a rotary air motor is used; those in which a small reciprocating air motor is geared to the engine either through the flywheel or through a chain to the crankshaft or the propeller shaft; and those in which some



THURBER PLANETARY GEARING

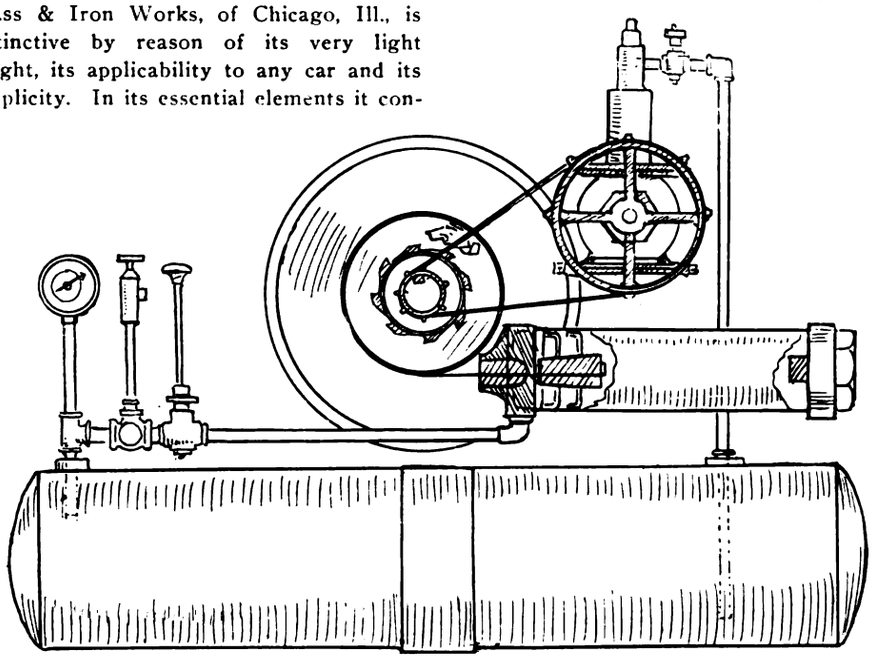
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combination of any of these mechanisms is used.

Spring starters also are of several classees and may be divided into those in which the spring that imparts the starting energy is rewound by the engine and those in which the rewinding operation is performed by the momentum of the car. The designations pedal operated and lever operated serve to identify the divisions into which the third class of starters are divided.

Flexible Piston Rod Turns the Flywheel.

Among the several pneumatic starters in the first class, the Vance, which is produced by the Chicago-Racine Aluminum, Brass & Iron Works, of Chicago, Ill., is distinctive by reason of its very light weight, its applicability to any car and its simplicity. In its essential elements it consists of a small power-driven air compressor, a long cylinder containing a piston that is connected to a ratchet drum on the crankshaft of the motor and an air storage tank, the whole layout being shown quite clearly by the accompanying illustration.



VANCE PNEUMATIC SYSTEM SHOWING PISTON AND PLUNGER AND PUMP

The pump, which is virtually the heart of the system, is a tiny little device with a bore and stroke of 1⅜ and two inches, respectively, though despite its small size it is capable of maintaining a constant pressure of up to 500 pounds in the air storage tank. The pump may be arranged to run constantly, in which case a "pop" safety valve set to blow off at any desired pressure is part of the equipment, or it may be arranged for manual control, in which case the operator switches on the pump when the pressure in the tank gets low and switches it off again when the required pressure is obtained. The storage tank measures 8 x 36 inches, and is tested hydraulically to 500 pounds pressure. One peculiarity of the tank is that the entering air passes through an oil seal which, it is claimed, filters the air and at the same time prevents leakage at the valve. The outlet is at the bottom, but an inside nipple reaches nearly to the top of the tank; thus no oil can be forced out.

The starter cylinder is a heavy, seamless brass tube with a cold-rolled steel head. The piston rod is unusual in that it is formed of a flexible steel ribbon which passes through a split bronze bushing in the cylinder head; to prevent the escape of air under pressure there is an oil-packed asbestos gland and a locking nut to tighten it. The plunger is a double one, consisting of two special cup leathers held by a steel piston with the lubricating compound between the two leathers; to this steel piston, the piston rod is connected.

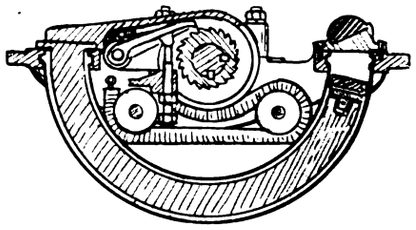
300 Revolutions a Minute on 40 Pounds.

The operation of the starter is very simple, and it is claimed that with 40 pounds pressure in the tank the average engine can be "spun" at from 300 to 400 revolutions a minute. Upon downward pressure of the starting valve, air under pressure is admitted behind the piston, thus drawing in the flexible piston rod and catching the ratchet on the drum attached to the engine crankshaft; to return the piston to its original and normal position there is a heavy tension spring which rotates the ratchet drum in the opposite direction and resets the starter for the next application. The weight of the whole outfit attached to the car is only 35 pounds.

The Durno compressed air starter, which is made by the Durno Mfg. Co., of Rochester, N. Y., and which is shown herewith in two sketches, is not unlike the Vance in its method of operation, though the design and construction are quite different. Instead of a ratchet arrangement on the end of the engine crankshaft, the Durno has a drum on which there is wound a chain which attaches to the piston of a cylinder beneath the car body. Depression of the starting valve admits air behind the piston, thus "turning over" the motor quite smartly, depending upon the pressure in the tank, of course. When pressure on the starting valve is released, the piston is drawn back to its original position with the aid of a spring. As the piston has a travel of 12½ inches in the cylinder and the diameter of the pulley on the crankshaft is only four inches, one movement of the piston suffices to rotate the crankshaft several times.

Employs a Crescent-Shaped Air Crank.

For raising pressure in the storage tank a Kellogg four-cylinder pump is provided and its operation is controlled manually from the dash by means of a lever. So that there may be no leakage of air during the time the car is stored over night, a shut-off valve, located close to the tank and ahead of all the other connections, is provided. The clutch which establishes the connection between the drum and the engine crankshaft operates quite automatically, picking up its work instantly the air pressure is turned on and dropping it when the valve is closed by the removal of the operator's foot. When this valve is closed, by the way, a special exhaust port is opened to relieve pressure behind the piston and permit the spring to do its work quickly.

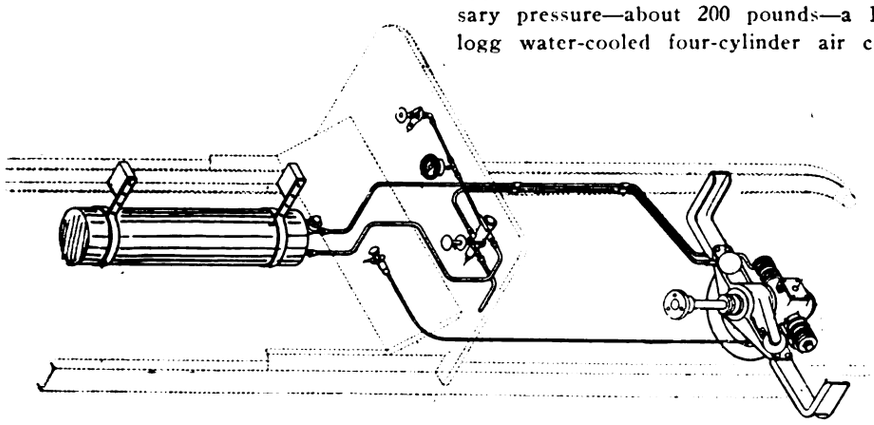


CRESCENT AIR CRANK

The Crescent air system, which is produced by the Crescent Air System Co., of Detroit, Mich., though employing neither a reciprocating nor a rotary air motor, is quite different from either of the two systems described; it operates on the same general principle of a piston within a cylinder, however. Though each of the separate elements incorporates distinctive features, without doubt the engine starting device is the most unique of them all. Briefly, it consists of a crescent-shaped cylinder in which there is a piston, the arrangement of the component parts being best made plain with the aid of the accompanying picture. When a charge of compressed air is admitted behind the piston it is forced around, a pawl

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automatically engaging a ratchet wheel which takes the place of the ordinary starting crank. Immediately the piston reaches the other end of the cylinder, it is spring-returned automatically to its original position and the operation is repeated as long as the air valve is held open and there is air in the tank. One of the noteworthy features of the system is that the return movement of the piston is rapid enough to permit a continuous rotative movement being imparted to the crankshaft.



PERSPECTIVE VIEW OF CRESCENT SYSTE I AS APPLIED TO CAR

The air-compressor is of the two-cylinder opposed type and is air cooled, flanges cast on the cylinders assisting in the radiation of heat. The most distinctive feature of the compressor is its method of mounting and its drive. As may be seen by the accompanying pictures, it is mounted directly in front of the "air crank," as it is styled by the makers, to which it is attached. The engine shaft extends through the "air crank" to the compressor, connection being made by means of a clutch operated by the driver. The lay-out of the whole system as it is applied to a car is shown by the accompanying sketch.

Geared Down Vane-Type Air Motor.

The Thurber compressed air starter, several views of which are shown herewith—it is made by the Thurber Rotary Starter Co. of Detroit, Mich.—employs a rotary air motor and therefore is quite different from any of those previously described. This little motor is of the vane type, though instead of being operated by means of springs, as is the usual method, the vanes are positively operated by means of a concentric guide ring on the motor cover. Tightness at the joints between the vanes and the casing thus is ensured.

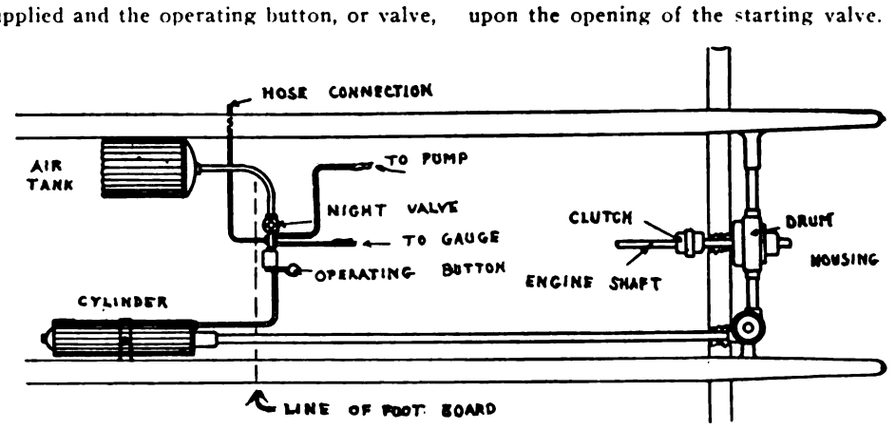
The rotary motor is connected to the crankshaft of the engine at the front, in place of the usual hand crank and to permit it to operate at comparatively high speed and consequently to develop considerable power it drives through the intermediary of a simple planetary gearing which is shown in one of the illustrations; the gear which connects with the engine crankshaft is not shown. In operation, air is admitted behind one of the vanes, thus rotating the central member until the second and then the third vane come into the working position. A simple roller clutch prevents damage to the starter from back-kicks.

The air reservoir measures 10 x 33 inches and may be mounted in any convenient place on the chassis; generally it is placed opposite to the muffler. To obtain the necessary pressure—about 200 pounds—a Kellogg water-cooled four-cylinder air compressor is supplied and may be attached to and driven from the engine in any convenient way. Just how the outfit looks on the average car is shown by the accompanying sketch, which makes quite clear the simplicity of the system. So that the operator may know at all times just how much air there is in the tank, a gauge is supplied and the operating button, or valve, generally is placed in the floor within easy reach of the driver's foot. Indicating that the average consumption of air per start is quite low, it is pointed out that with 150 pounds pressure in the tank a 40-horsepower motor has been started as many as 150 times without the necessity for operating the pump.

In the Merrall starter, which is manufactured by the Merrall Air & Steam Engine Co., of New York City, the starting motor is a clever combination of the rotary and reciprocating types, as is made plain by the accompanying sketches, which show both the internal and the external appearance of the device. The whole device is so simple that it should be easily comprehensible to any schoolboy who has ever possessed a toy steam engine, for it is in fact but little more than that. Its six cylinders are provided with pistons of the trunk pattern and all of them operate on the same crankpin.

Toy Steam Engine Principle Adopted.

Each of the pistons is pivoted to the rear wall of the casing, so that it is free to oscillate as the motor shaft is turned. A single port enters near the closed end of each cylinder and two ports, one for the exhaust and one for the intake, register with corresponding ports in the rear wall of the casing. As the crankshaft crosses the dead center with relation to any one of the miniature cylinders the port in the cylinder is registered with the corresponding inlet port in the casing wall and air under pressure is admitted to the cylinder, causing the piston to rotate the crankshaft. When the piston has reached the half-way point in its travel, the cylinder port has moved out of line with the inlet port and the expansive power of the compressed air is utilized to drive the piston the remainder of the stroke, when the exhaust ports register and the used air is exhausted. As six cylinders are provided, it is obvious that in any position of the motor shaft at least two of the cylinders must be on the working stroke and starting must be the inevitable result upon the opening of the starting valve.



PLAN VIEW OF THE DURNO SYSTEM SHOWING COMPONENT PARTS

Unlike the other starters that have been described, the Merrall device can be attached to the gasolene motor in any one of several ways, though the preferred method is to mount it adjacent to the flywheel through which it drives by means of gearing. To prevent damage to the device as the result of back-kicks from the engine, a simple clutch is provided. Where a compressor is supplied with the system, it is cast integral with the motor case and comprises two horizontally opposed cylinders. With-

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out the compressor, however, the starter can be operated by spent gas taken from one of the cylinders and stored in a reservoir beneath the car. The device, it is claimed, will start the average motor some 20 times on as little as 30 pounds air pressure, and on 100 pounds pressure it will develop 3½ horsepower. Complete with a pressed steel tank measuring 7 x 48 inches, the outfit weighs approximately forty pounds.

Advantages of Compressed Air "on Tap."

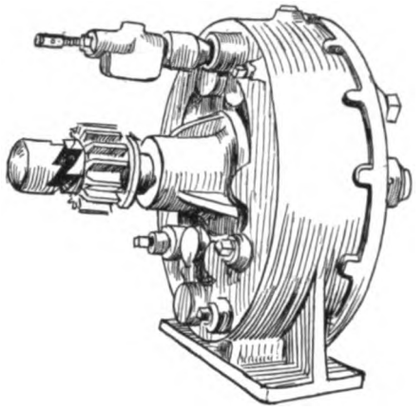
One of the particular advantages of any air system, of course, is that it provides air for the inflation of tires, and as tires always require to be inflated at stated intervals, this is an advantage that cannot well be overlooked. If a power pump is carried to inflate tires, then that pump may as well be put to other uses, among which well may be the starting of the motor. Incidentally, compressed air at the command of the driver furnishes him with power to jack up his car in a jiffy, to blow a loud-sounding whistle or to clean the dust off upholstery quickly and easily. Also, a leak in an air system may do no more serious damage than to inconvenience the driver, whereas a leak in an electric system might cause expensive damage to the battery or to any of the other parts. Such leaks are anticipated, of course, and are provided against by the use of fuses.

In the care and repair of any compressed system the first consideration always should be to see that all joints are kept tight; loose joints probably cause more trouble than does anything else. If the installation is not made at the factory of the maker, such joints should be made up, as plumbers say, with either white or red lead or shellac and should be pulled as tightly as possible without danger of stripping threads. The second consideration should be to see that all valve seats are in proper order—that they are not pitted or corroded and that they actually hold air. Valves that are in bad condition can be ground in in the same way that engine valves are ground, only care must be taken to see that the seats are not scratched in case the valves are made of brass.

Care Needed to Ensure Good Service.

In the Vance system, which was described first, care must be taken to see that the oil level in the bottom of the air reservoir is maintained at the proper height, for upon this depends the length of time the tank will hold air; the same obtains in the case of the Durno. The flexible piston rod of the Vance may require a few drops of oil from time to time, and great care must be taken to see that the compressor is properly lubricated, for if it runs continuously damage otherwise is likely to result. Oil holes are provided and the instructions of the manufacturer should be followed implicitly.

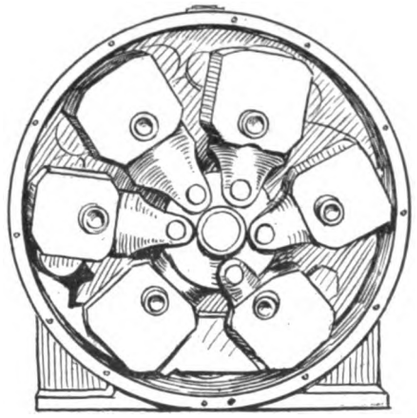
Instructions for the care of the Durno starter are few and best can be expressed in the words of the maker: "Once a year pack pulley housing with grease. Twice a year put wineglassful of oil in oil hole in night valve, taking care to replace the one-



EXTERIOR OF MERRALL STARTER

eighth inch plug securely. The pump will require oiling about once a month."

The compressor of the Crescent system will require to be oiled occasionally, according to the instructions of the maker, and the air crank only at long intervals. Otherwise there is nothing for the operator to do but to make sure, occasionally, that all the air connections are tight; they need not be touched, of course, unless the starter gives indication of failing power or the tank will not retain its charge of air.



INTERIOR OF MERRALL STARTER

Instructions for the care of both the Thurber and the Merrall are the same as those for the Crescent, except that the Merrall casing is packed with grease and need not be touched from one season's end to the next.

A word with regard to "pop" safety valves, where they are employed: These devices are safety devices, as their name indicates, and they should be examined from time to time—they should never be permitted to go without attention more than a month—and the operator should make certain that they are operating properly by pumping the tank pressure slightly higher than that for which the valve is set. If the valve "blows off," all is well and good, but if it does not do so it should be taken apart if necessary and cleaned thoroughly, for the life of the persons in the car may depend upon its action. Sometimes when a "pop" valve sticks a slight tap with a light hammer near the valve will loosen it, though a fault of the kind should be taken as an indication that the valve requires cleaning.

Gould Develops New Starter Battery.

That the rigorous service to which the storage battery for electric lighting and engine starting purposes is put, the alternate heavy drain and idle period and the continual jar and vibration, requires special construction—that no ordinary battery developed for other uses can be expected to "stand up" for long under such conditions—long has been known to battery builders, and among those who have brought out batteries especially designed for this work is the Gould Storage Battery Co., of New York, which just has placed on the market a new type of battery, which is designed for the maximum resistance to wear and to abuse.

The principal difference between the new battery and its predecessors is in the active material in the plates. In the positive plates this material is very hard and dense and is closely bound so that only a thin surface layer is softened when the plate is developed for service. As the plate wears in continued service more of the mass gradually is softened and the result is that the capacity of the battery is retained practically throughout its life. In the negative plates, the material has been proportioned to resist any tendency toward shrinkage during the life of the plate, and the mass is calculated to retain its initial hardness for long periods. The cells are contained in hard rubber jars which, in turn, are sealed in hardwood boxes in such a way that creeping and consequent corrosion are effectually prevented. Connections are unusually heavy and are placed in an accessible position.

To Prevent Silver from Tarnishing.

In order to prevent the silvering of lamp reflectors from tarnishing when not in use it is a good scheme to give the surfaces a light coating of alcohol in which a little collodion has been dissolved. This will form an excellent protection, and is easily washed off with warm water. Of course, any polished metal surface can be protected in the same way.

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WINS NATIONAL TOUR WITH FOUR-YEAR-OLD LOCOMOBILE

(Continued from page 15.)

roads encountered. In the afternoon when running parallel to the Missouri river a half-mile stretch of real mud was encountered and some of the cars floundered around in it and lost much time, which later was made up, despite a number of steep hills and rough spots. None of the drivers was penalized.

The eighth day of the tour, which led the tourists over the 156 dusty miles between Glasgow and Havre, Mont., was virtually a repetition of the seventh day, with hours of running over flat plains that offered very little in the way of scenery and very much in the way of dust and discomfort. Along nearly the whole of the day's trail there were camps of the government reclamation service force, and for the first time glimpses were caught of prairie-dog towns, where hundreds of the little animals sat up on their haunches and barked at the passing cars. Although the hills were steep in the late afternoon, none of the cars had trouble in negotiating them, and all of them got in on time; which means that there were no penalizations. When the cars arrived in Havre, by the way, they were met by a delegation of 20 ladies dressed in white who presented bouquets to all the passengers.

The actual finish of the tour was about as spectacular an event as took place during the whole of the trip from the beautiful Mississippi Valley to the West. Dr. Park, who had been driving consistently but who had lost 15 minutes because of tire trouble on the last leg of the run, tore through the low-lying foothills for the last 21 miles in an effort to make up that time, and when he crossed the finish line he had only one minute to spare. A little later, Warren Munzer, in one of the diminutive Krit cars, rushed over the line with both rear tires flat and flapping; he had no time to repair them and rather than check in late he drove with them as they were and arrived in time.

Far outside of Glacier Park, the tourists were met by a band of fully 100 Indians in full regalia, and with them as an escort the procession wended its way into the reservation and, when the cars finally were brought to a halt in front of the hotel, every window framed eager faces and the roads were lined by those who had been expecting the tourists ever since they started, eight days before. Following the final checking-in process, the band dispersed, some to remain awhile to view the wonders of the park, some to travel still further westward and some to hit the homeward trail.

EAST INDIAN STATE AIDS EMPLOYES IN CAR BUYING

Mysore, in India, Advances Salaries for the Purpose but Takes Title to Vehicles — Prejudice Against Red Cars.

Reporting that the "general conditions throughout southern India are highly favorable for rapidly developing trade in motor cars and motorcycles," Henry D. Baker, who is performing special service in India and Ceylon for the United States government, cites a remarkable example of the manner in which one of the Indian States is encouraging the use of such vehicles—a scheme of making advances of money or salary to State employees for the purchase of either motors cars or motorcycles.

"The new scheme will make it easy for the higher-salaried officials to purchase motor cars and for employees of lower salaries to purchase motorcycles," writes Baker. "For the purchase of motor cars a grant of $1,334 is to be given, or four months' extra salary, whichever is the lower, and for the purchase of motorcycles and side cars a grant will be allowed of $500, or four months' salaray, whichever is the lower. In either case the money thus advanced is to be repaid to the government in 36 monthly installments without interest. The loan will be secured by a mortgage which the government will hold on the motor car or motorcycle purchased. Thus the motor vehicle can be put to use at once, but the expense will not have to be entirely met for three years.

"The government of this native State of Mysore, which is next to Hyderabad as regards population, area, and general importance among the independent native States of India, is noted for its progressiveness, and in initiating this plan of encouraging the use of motor vehicles among its employees it has been actuated by a desire to increase the efficiency of the public service, and especially to make it easier for government officials to go to and from their work with little loss of time and to attend to official services outside their offices with greater celerity. The fact also that such motor vehicles may provide the opportunity for wholesome recreation outside of working hours, and also may make it possible for government employees to live at longer distances from their work, where rent may be cheaper and better homes obtainable, has furnished another motive to the government for the adoption of this interesting scheme.

"Of course, the purchase of a motor car or motorcycle will depend upon the amount of the employee's salary, as an advance cannot be obtained for an amount larger than the total salary for three years. There are over 1,000 persons on the Mysore government civil list, most of whom draw salaries which will readily permit them to take advantage of the government's plan for granting loans for the purchase of motor veheicles. [Baker's report was accompanied by a copy of the last quarterly civil list of the Mysore government, which may be of interest to American manufacturers of motor cars and motorcycles, as it contains the names of officials of the Mysore government, and also the amount of monthly salaries they receive. This list will be loaned to interested manufacturers by the Bureau of Foreign and Domestic Commerce.]

"I understand that there is already a very great number of applications by Mysore government officials to obtain the advances necessary to equip themselves with motor vehicles. I am also told that the governments of other States of India are now considering the same plan, and that its widespread adoption throughout India is a possibility of the future."

Baker reports that there is only one American motorcycle represented in India and adds:

"Local dealers have informed me that American manufacturers should not send red motorcycles to India, the red color of one American car now offered here having greatly interfered with its sale and offsetting other special advantages, such as the fact that it is unusually well sprung.. These motorcycles should be either black, blue, or slate color.

"Over all India, red is the color of official service, and persons in red uniform in the service of the government who might be using motorcycles do not seem to wish their machines to match their clothing, nor do persons not in the public service wish to ride motorcycles of a color which might suggest that they are postmen or policemen, or other persons engaged in government service.

"Side cars for motorcycles are very much used in southern India, especially by Europeans, who like to have such provision for taking their wives or children out with them; in fact, it is doubtful if motorcycles would have much sale here without such provision for side cars. As most of the motorcycles in use are of English manufacture, it might be well for American manufacturers to follow the English patterns for side car equipment and attachment, as dealers already stocked with English side cars would not then be prejudiced against American motorcycles because of the difficulty of fitting these side cars to the British machines."

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1,044,528. Spark Plug. Ezra F. Hopkins, Chicago, Ill. Filed Nov. 28, 1910. Serial No. 594,421. (Plug with adjustable gap.) 4 claims.

1,044,569. Carburetter. Fredereic Stanton Perrin, New York, N. Y. Filed Oct. 12, 1909. Serial No. 522,282. (Spray nozzle with slit, and movable port-plate to regulate opening.) 4 claims.

1,044,576. Carburetter. Jerome E. Russell, Rudd, Iowa. Filed Feb. 5, 1912. Serial No. 675,666. (Spray nozzle opening into air passage separate from main air passage.) 4 claims.

1,044,594. Carburetter. Charles M. Stroud, Minneapolis, Minn. Filed Jan. 17, 1910. Serial No. 538,484. (Carburetter with constant-level pool of gasolene upon which air impinges 4 claims.)

1,044,619. Resilient Hub for Vehicle Wheels. Edward Yoder, Tulsa, Okla. Filed May 28, 1912. Serial No. 700,207. (Hub cushioned by flat leaf springs.) 3 claims.

1,044,692. Vehicle Spring. Percival L. Rookledge and George W. Gillespie, Cambria, Cal. Filed Nov. 30, 1910. Serial No. 594,985. (Two superposed semi-elliptic springs linked to an intermediate flat spring.) 12 claims.

1,044,699. Wheel. Frank J. Singler, Irving, Ill. Filed Oct. 24, 1911. Serial No. 656,460. (Resilient wheel with curved spring spokes.) 3 claims.

1,044,703. Tire Protector. Simon Stern, Albuquerque, N. M. Filed Dec. 16, 1910. Serial No. 597,710. (Tire armor of wire fabric.) 1 claim.

1,044,709. Oil Feeding System for Internal Combustion Engines. Willard Irving Twombly, New York, N. Y., assignor to Twombly Motors Co., New York, N. Y., a corporation of New York. Filed March 6, 1911. Serial No. 612,666. (Lubricating system with cam-operated valveless plunger pump.) 4 claims.

1,044,755. Oil Engine. James William Cross, London, England, assignor to the Westinghouse Brake Co., Ltd., London, England. Filed May 17, 1910. Serial No. 561,795. (Air-valve arrangement for oil engine with hot combustion chamber.) 2 claims.

1,044,779. Tire Signal. George T. Hackley, Los Angeles, Cal. Filed Dec. 14, 1910, Serial No. 597,362. Renewed April 11, 1912. Serial No. 690,181. (Visual indicator for giving warning of escape of air from tire.) 19 claims.

1,044,846. Hydraulic Change-Speed Gear. Marius Barbarou, St. Denis, France, assignor to Societe Anonyme des Automobiles Delaunay-Belleville, St. Denis, France, a corporation of France. Filed Dec. 8, 1910. Serial No. 596,213. (Means for maintaining tight joints in distributer plates of hydraulic transmission.) 6 claims.

1,044,888. Wheel Tire. Frank Householder, Guthrie, Okla. Filed April 17, 1911. Serial No. 621,556. (Resilient tire with internal hoop springs.) 3 claims.

1,044,894. Effort Transmitting Frictional Device. Harry Ward Leonard, Bronxville, N. Y. Filed Aug. 11, 1903. Serial No. 169,071. (Adjustable governor for dynamo clutch control.) 36 claims.

1,044,898. Fluid Pressure Controlling System for Motor Vehicles. Alexander Grant McGregor, Salt Lake City, Utah. Filed June 14, 1910. Serial No. 566,893. (Brake operated by air or other fluid pressure.) 4 claims.

1,044,900. Vehicle Curtain. Theodore C. Merz, Detroit, Mich., assignor of one-half to Solomon E. Heineman, Detroit, Mich. Filed July 15, 1912. Serial No. 709,322. (Curtain with folding window with weatherproof frame.) 4 claims.

1,044,901. Steering Indicator. Frank B. Mills, Chicago, Ill. Filed Feb. 7, 1912. Serial No. 676,075. (Electric signal to indicate direction of steering.) 2 claims.

1,044,919. Sanding Device for Automobiles. Lester W. Samuels, New York, N. Y. Filed July 26, 1912. Serial No. 711,748. (Hollow mudguard containing sand and spout to discharge on rear wheels.) 2 claims.

1,044,951. Resilient Wheel. Theodore Eddy Van Derwerken, Green Island, N. Y., assignor of one-half to James E. Brooks and Charles C. Finch, Albany, N. Y. Filed Aug. 12, 1911. Serial No. 643,798. (Wheel with double rim and interconnected springs between rims.) 5 claims.

1,044,952. Starting Device for Explosive Engines. Lewis C. Van Riper, New York, N. Y. Filed Sept. 12, 1910. Serial No. 581,600. (Anti-kick crank with friction engagement.) 15 claims.

1,044,973. Spring Wheel. George F. Barnes and Willis A. Suttle, Freestone, Tex. Filed May 20, 1912. Serial No. 698,532. (Wheel with radial springs and rubber cushions.) 4 claims.

1,045,008. Dirigible Headlight. James Austin Ellison, Wilmington, Del. Filed April 10, 1912. Serial No. 689,714. (Headlight moved in consonance with movement of steering gear.) 12 claims.

1,045,018. Demountable Rim. Edgar L. Gold and Jacob H. Messinger, Nazareth, Pa. Filed May 2, 1912. Serial No. 694,787. (Quick detachable rim and fastenings.) 1 claim.

1,045,041. Starting Crank for Explosive Engines. Hermann H. Kolb, Badger, Iowa. Filed March 28, 1912. Serial No. 686,853. (Starting crank with pivoted handle held by adjustable spring.) 3 claims.

1,045,061. Cooling Device for Gas Engines. Charley A. Myers, Lexington, Neb. Original application filed July 2, 1910, Serial No. 570,147. Divided and this application filed Sept. 25, 1911. Serial No. 651,148. (Driving gear for a plurality of cooling fans.) 3 claims.

1,045,067. Motor Vehicle. Robert J. Nichols, Berlin, Ga. Filed May 29, 1911. Serial No. 630,169. (Friction driving gear for winding drum on rear of car.) 1 claim.

1,045,076. Shock Absorber. Richard Pope, Brisbane, Queensland, Australia. Filed Jan. 11, 1912. Serial No. 670,638. (Rack-and-pinion gearing actuating frictional device on a shaft.) 3 claims.

1,045,852. Lens and Reflector Retainer for Lamp Doors. William T. Jones, Detroit, Mich., assignor to the Edmunds & Jones HMfg. Co., Detroit, Mich., a corporation of Michigan. Filed Sept. 11, 1911. Serial No. 648,752. (Reflector and lens fastened to door of lamp.) 10 claims.

1,045,859. Ignition Device for Gas Engines. (Leon J. le Pontois, New Rochelle, N. Y., assignor, by mesne assignments, to H. W. Johns. Filed Oct. 21, 1908. Serial No. 458,773. (Make-and-break ignition system with magnetic breaker.) 9 claims.

1,045,861. Side Curtain Support for Vehicles. Allen Loomis, Detroit, Mich., assignor, by mesne assignments, to Packard Motor Car Co., Detroit, Mich., a corporation of Michigan. Filed Nov. 6, 1908. Serial No. 461,373. (Curtain support mounted on side door.) 15 clams.

1,045,922. Steering Gear. Charles Henry Willard, Pasadena, Cal., assignor of one-half to Dora Rowley, Gila Bend, Ariz. Filed Sept. 28, 1911. Serial No. 651,806. (Four-wheel steering gear.) 3 claims.

1,045,955. Pneumatic Tire. Fark A. Dees, Pascagoula, Miss., assignor to American Tire Co., St. Louis, Mo., a corporation of Missouri. Filed Jan. 3, 1911. Serial No. 600,449. (Repair patch for pneumatic tire.) 3 claims.

1,045,966. Starter for Explosive Engines. Judson E. Galtra, Adrian Minn. Filed March 4, 1912. Seria. No. 681,479. (Compressed air starter.) 3 claims.

1,045,992. Motor Truck. James W. Linn, Oregon City, Ore. Filed Dec. 29, 1910. Serial No. 599,835. (Motor vehicle in which front axle of trailer forms rear axle of truck proper.) 3 claims.

1,046,010. Automatic Controlling Device for Vehicle Lamps. Oliver W. Page, Ione, Wash. Filed Sept. 28, 1911. Serial No. 651,800. (Means for moving headlights concurrently with steering gear.) 1 claim.

1,046,030. Engine Starter for Automobiles. Wm. A. Sharpe, Denver, Col., assignor to the S. & S. Auto Starter Co., Denver, Col., a corporation of Colorado. Filed Oct. 16, 1911. Serial No. 654,988. (Anti-kick crank with ball-ratchet mechanism.) 10 claims.

1,046,090. Pneumatic Spring for Vehicles. Richard Liebau, Watervliet, N. Y., assignor to the Westinghouse Air Spring Co., a corporation of Pennsylvania. Filed Jan. 21, 1908, Serial No. 411,894. Renewed March 9, 1910. Serial No. 548,262. (Pneumatic cushion of cylinder-and-piston type.) 7 claims.

1,046,091. Pneumatic Spring for Vehicles. Richard Liebau, Watervliet, N. Y., assignor to the Westinghouse Air Spring Co., a corporation of Pennsylvania. Filed Jan. 21, 1908, serial No. 411,893. Renewed March 9, 1910. Serial No. 548,261. (Pneumatic spring of cylinder-and-piston type.) 9 claims.

1,046,093. Cape Cart-Hood. Reginald Walter Maudslay, Coventry, England. Filed Jan. 17, 1912. Serial No. 671,582. (Door in side curtain swinging with car door.) 2 claims.

1,046,111. Carburetter. Carl F. Schulz, Brooklyn, N. Y. Filed Aug. 21, 1911. Serial No. 645,099. (Carburetter with air and fuel valves connected by fulcrumed lever.) 15 claims.

1,046,141. Gas-Mixing Valve for Explosive Engines. Adolph Becker, Wheeling, W. Va., assignor to Albert M. Schenk, Wheeling, W. Va. Filed Jan. 4, 1912. Serial No. 669,382. (Carburetter of the mixing valve order.) 9 claims.

1,046,156. Variable Speed Transmission Mechanism. Charles A. Dreisbach, New Haven, Conn. Filed Oct. 11, 1911. Serial No. 653,984. (Worm and gear drive with roller pins in gear and movable worm with varying pitch.) 3 claims.

1,046,201. Automobile Body. Albert Kraetzer, Chicago, Ill. Filed Jan. 24, 1911. Serial No. 604,348. (Seat one arm of which constitutes a door.) 5 claims.

1,046,220. Engine. Ernest E. Proulx, Williamsett, Mass. Filed Feb. 21, 1912. Serial No. 679,001. (Rotary cylindrical valve on cylinder heatd.) 6 claims.

1,046,256. Brake. Preston H. Breed, Pittsfield, Mass., assignor, by mesne assignments, to Alden Sampson Mfg. Co., a corporation of New Jersey. Original application filed Sept. 1, 1909, Serial No. 515,650. Renewed July 13, 1911, Serial No. 638,396. Divided and this application filed May 9, 1910, Serial No. 560,224. Renewed Feb. 24, 1912. Serial No. 679,768. (Sampson cam-operated brake mechanism.) 4 claims.

1,046,272. Emergency Traction Device. Frank B. Comins, Sharon, Mass. Filed March 11, 1912. Serial No. 683,062. (Chain-link mat.) 2 claims.

1,046,273. Motor-Vehicle Suspension. Kenneth Crittenden, Detroit, Mich. Filed July 12, 1910. Serial No. 571,550. (Single cross-spring rear suspension.) 3 claims.

1,046,277. Starting Mechanism for Internal-Combustion Engines. Charles A. Deal and Marvin E. Cox, Los Angeles, Cal. Filed Aug. 1, 1911. Serial No. 642,893. (Lever starting mechanism with friction clutch.) 3 claims.

1,046,280. Internal Combustion Engine. Victor J. Diefenderfer, Allentown, Pa., assignor of one-third to Charles E. Lehr, Bethlehem, Pa. Filed Oct. 30, 1911. Serial No. 657,395. (Rotary engine with two rotors and an intermediate rotating valve, one rotor for pumping and compressing and the other for explosion.) 6 claims.

1,046,289. Spring Wheel. Edwin Lewis Goltry, Red Oak, IoIwa. Filed Feb. 3, 1912. Serial No. 675,113. (Disk wheel with enclosed curved springs supporting tire.) 1 claim.

1,046,331. Motor Arrangement for Vehicles of All Kinds. Theodor Reuter, Winterthur, Switzerland. Filed Aug. 31, 1910. Serial No. 579,929. (Pneumatic power transmission system.) 13 claims.

1,046,344. Carburetter. John K. Stewart, Chicago, Ill. Filed July 27, 1911. Serial No. 640,749. (Carburetter with heating coil in annular chamber surrounding mixing chamber.) 5 claims.

1,046,434. Carburetter. Leon Bollee, Le Mans, France. Filed April 7, 1909. Serial No. 488,348. (Multiple carburetter system.) 1 claim.

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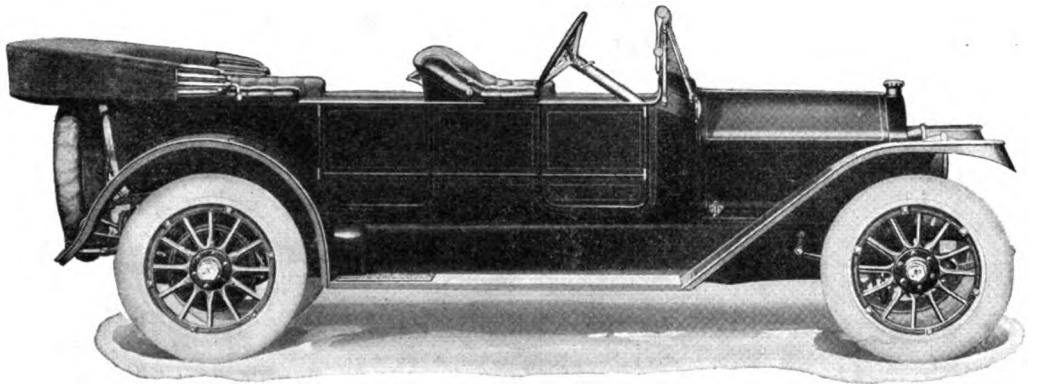
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National

World's Fastest 500 Miles in Competition

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Electric Started and Lighted. Not only left side drive, but *access* to both front doors

Five Models, $2750 to $3400

National Dealers Stick

THE dealers who form the great National Sales Organization go right along year after year building up a permanent, profitable business for themselves.

There's as fine a group of "live wires" in the National Sales Organization as ever did business under one pennant—just the kind of motor car sales specialists with whom you would be proud to be associated.

They enjoy year-round business. They are free from "come-backs;" their sales remain sales; their profits stay profits. They are backed by a reliable, here-to-stay company that has the confidence of the public.

Here may be a big opportunity for you

It depends where you are located. If you happen to be doing business in open *National* territory, you are particularly fortunate at this time.

We are in a position to add to our present Dealers Sales Organization a limited number of "live wires"—men who know how to sell automobiles and who have *made good*.

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Just take that telegraph blank in the upper left hand pigeon hole of your desk and send us this message collect: "Will be in Indianapolis ——— to visit your factory and look over your new models"—and we'll meet you at the depot in a *National*. If you can't come now—let us know by return mail and we will send you instantly complete specifications, illustrations of various models, prices and our liberal offer to Live Dealers.

Your request for information does not obligate you in any way, so let us hear from you by return mail—or, we would rather receive the telegram.

National Motor Vehicle Company Dept. 90 **Indianapolis, Indiana**

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Endurance is the Supreme Test

Five times around the earth and still good—two hundred fifty million, five hundred forty thousand revolutions under load do not wear out

NEW DEPARTURE BALL BEARINGS



During the life of these bearings, five sets of bearings of another type were worn out and replaced. New Departure ball bearings work with the least friction and, therefore, give maximum wear and service – American made and guaranteed.

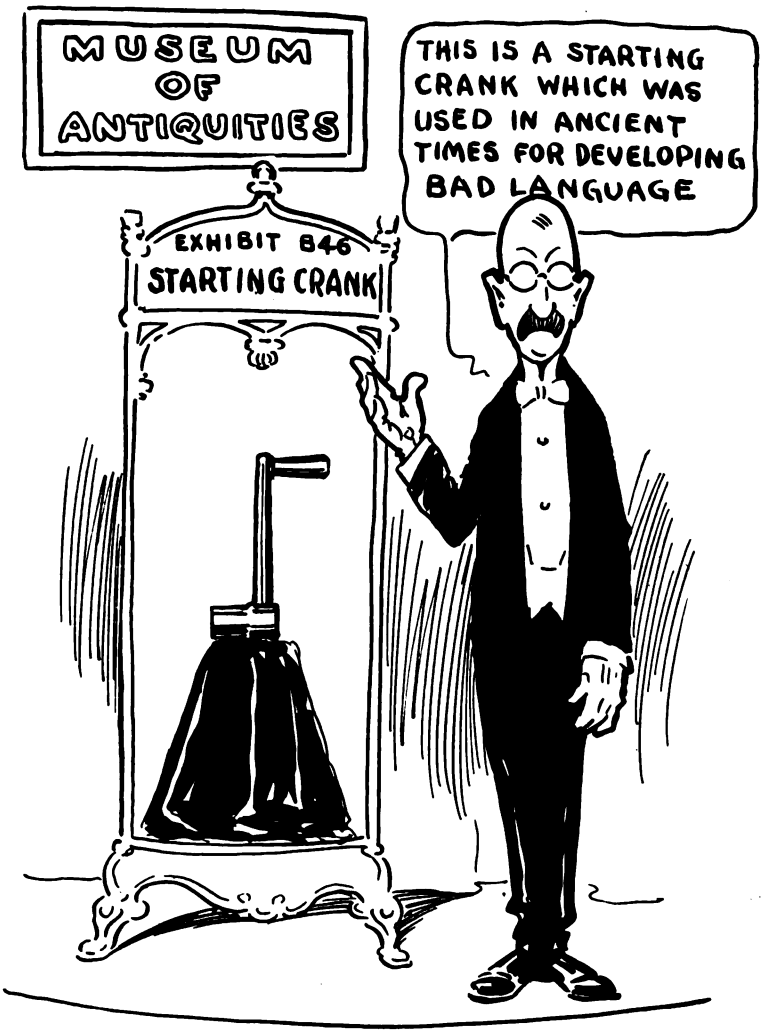
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The New Departure Manufacturing Company, Bristol, Connecticut

Western Branch, 1016-17 Ford Building, Detroit, Michigan

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Don't Be Antique— Be Up-to-Date



In every museum there's a niche waiting for the automobile hand crank.

And soon there will be niches for the people who continue using them.

Don't be antique. What's the use, when there are Electric Crankers that know their business and can do a better job of cranking than any human being.

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TRADE MARK

Now the TUTO HORN is within the reach of every car owner

Improvements and Manufacturing in Large Quantities makes it possible to furnish the Genuine $25.00 TUTO for $15.00. This new price includes all of the Exclusive features that have made the TUTO horn so practical and popular:

$15.00

Two-tone Feature—Low note for regular service—loud note for emergencies—from one horn and one button.

Instantaneous Action—No loss of time for motor to "speed up."

Steering Wheel Fixtures—Protects the cord—gives neat, permanent job.

Button Always Under Thumb—Gives quick action in case of emergency.

Automatic Operation—Unconscious gripping of button upon approach of danger forces button clear down and gives loud note—instantaneously. No hesitating, no selecting of horn buttons, etc.

Reliability—Always responsive, as same button, cord and horn are used for both notes, thus are self-testing. There is nothing to oil or clean, so neglect will not interfere with operation or ruin the working parts, the same as in mechanical or motor horns.

Liberal Guaranty—Guaranteed indefinitely against inherent defects or breakage of parts due to such defects. We always give the customer the benefit of the doubt.

No Experiment—The Tuto Horn has been marketed for three years and has given unusual satisfaction through its reliability and freedom from trouble. This is proven positively by our records, which show that we have been called upon by less than 1% of Tuto owners for advice or repair parts.

Once a Tuto User, always a Tuto Advocate

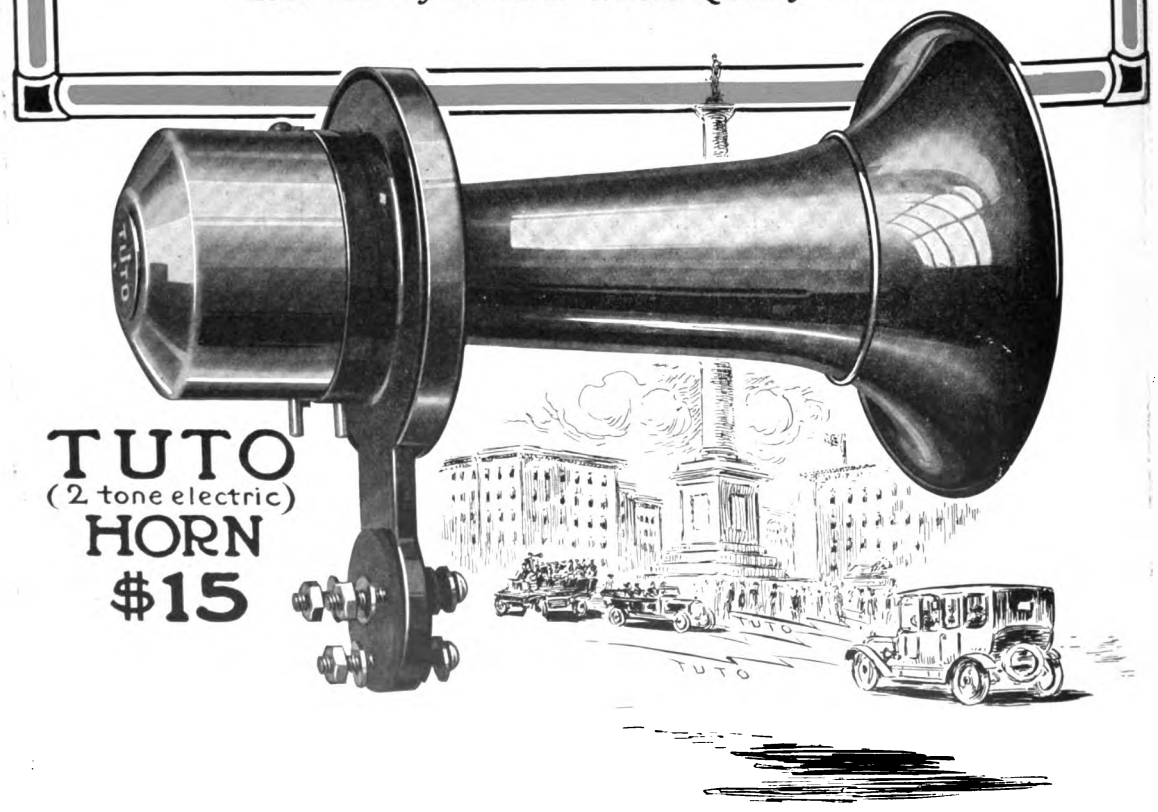
Tuto users never can go back to the old bulb horn or to the Slow Accelerating Motor Horn.

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Kansas City, Mo. **501 Olive Street, Elyria, Ohio, U. S. A.** **San Francisco, Cal.**

"Look for Elyria-Dean Where Quality's Seen"



TUTO
(2 tone electric)
HORN
$15

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TRADE MARK

A High Grade Electric Warning Signal Guaranteed, $8.00

THE REXO HORN IS THE STANDARD EQUIPMENT HORN, evidenced by the number of manufacturers who furnish the REXO on cars they make.

Made from the best of selected materials, assembled by expert workmen in a well-appointed factory.

The action is instantaneous, always responsive.

There is nothing to oil or grease, nor is it necessary to clean in gasoline, as there is nothing to clog or congeal.

Guaranteed indefinitely against inherent defects or breakage of parts due to such defects.

We always give the customer the benefit of the doubt.

Your Dealer will demonstrate the REXO for you today.

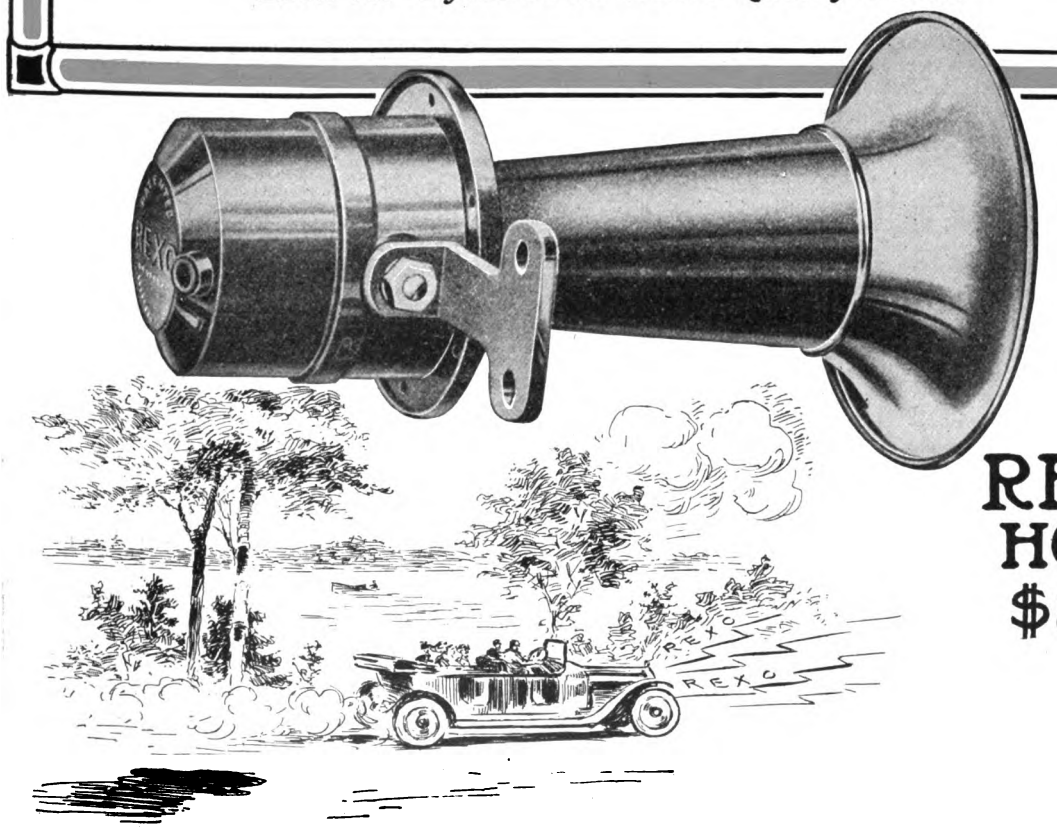
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REXO HORN $8.00

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Cadillac 1914

Cadillac leadership in scientific motor car development is once more strikingly demonstrated

A new element of efficiency ***A new quality of luxury*** ***A new source of economy***

Each year you have looked to the Cadillac for the real and substantial progress in motor car development.

You have looked to the Cadillac for the great essentials in the practical motor car.

And you have not looked in vain.

Now conceive, if you can, a Cadillac with its essential functions sharpened, accentuated and refined.

Conceive such a process of refinement culminating in an entirely new riding quality of unexampled ease.

This is precisely what has come to pass in this new car.

The principal contributing factor—the two speed direct drive axle—is described in detail elsewhere.

The Cadillac Delco electrical system of automatic cranking, lighting and ignition, the first practical system ever made and first introduced by us, has, after experience with it on 27,000 Cadillacs, been still further developed, improved and simplified and the slight attention required from the user materially reduced.

The carburetor has been improved, its efficiency and its well-known economy increased. It is hot water jacketed and electrically heated to facilitate starting in cold weather.

The rear springs are six inches longer.

The body designs are new and strikingly handsome.

Front seat passengers may enter or leave the car at either side.

These and many other refinements of essential details make for a greater and a better Cadillac and serve to more firmly establish its position as America's leading motor car.

The Cadillac Company has never disappointed you in the smallest particular or in a single promise.

We promise you again, in this new car, a positive revelation in motor car luxury.

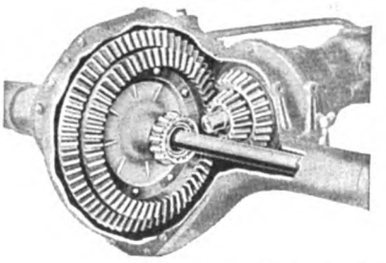
Cadillac two-speed direct drive axle

The advantages of this axle do not lie in its being an improvement so far as its functions as an axle are concerned, but rather in the manifold advantages attained in other directions through the medium of the axle.

In place of the single bevel pinion and single bevel driving gear common to ordinary construction, there are two bevel pinions and two bevel driving gears. This affords two different gear ratios, each driving direct from the engine to the axle without intermediate gearing.

The usual single direct drive gear ratios range from about 3.5 to 1 down to 4 to 1 according to the car. Any single gear ratio is necessarily what it is because a single gear ratio must be, or should be, the particular one which is best adapted for all around general use.

No one single gear ratio can possibly be just right for all speeds and for all conditions. But by using two direct gear ratios we have exactly doubled the efficiency as it concerns the relation of power developed by the engine to the economical and efficient application and transmission of that power to the driving of the car.



In the new Cadillac axle we have, as before stated, two direct-drive gear ratios. The low direct drive gear, which is 3.66 to 1, is especially adapted for city driving, where starting, stopping and slowing down are frequent and where cautious operation is necessary.

The high direct drive gear ratio, which is 2.5 to 1, is of special advantage where speeds of about 16 miles or more per hour are permissible and desirable.

The change from one gear ratio to the other is made by means of a simple, convenient electric switch.

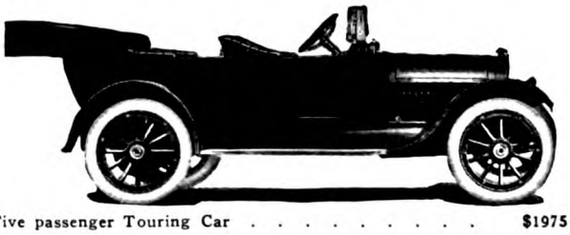
The advantages of the high direct drive gear ratio lie primarily in the fact that with it, any given speed of the engine produces an increase of about 42 per cent in the speed of the car. For example: at an engine speed of 700 revolutions per minute, with the low direct gear engaged the car will travel approximately 21 miles per hour; while on the high direct gear it will travel approximately 30 miles per hour with no increase in engine speed.

This great increase in car speed in its relation to engine speed accomplishes a number of desirable things.

Among these is a decrease in gasoline consumption for a given mileage. This is due to the fact that with the engine turning over slowly—comparatively speaking—a given quantity of gas is utilized to greater advantage and generates more actual power than with the engine turning over more rapidly. Friction also is materially reduced by reason of the parts operating more slowly and this, too, is a factor in reducing gasoline consumption when driving on the high gear.

Another great advantage is that with this direct drive high gear ratio, there is obtained an extraordinarily luxurious smoothness in running, together with a marked quietness and a comparative freedom from the vibration which, to a greater or less extent, is ever present when traveling at high speed with a low gear ratio.

In attaining these much desired qualities, instead of adding complications to the power plant which make for greater fuel consumption and for greater upkeep expense, they have been attained by methods which are strikingly the reverse, viz. by methods which lessen the fuel consumption, methods which decrease friction with its resulting wear and methods which make for longer life, together with an appreciable decrease in the cost of operation and maintenance.



Five passenger Touring Car $1975

Other Models

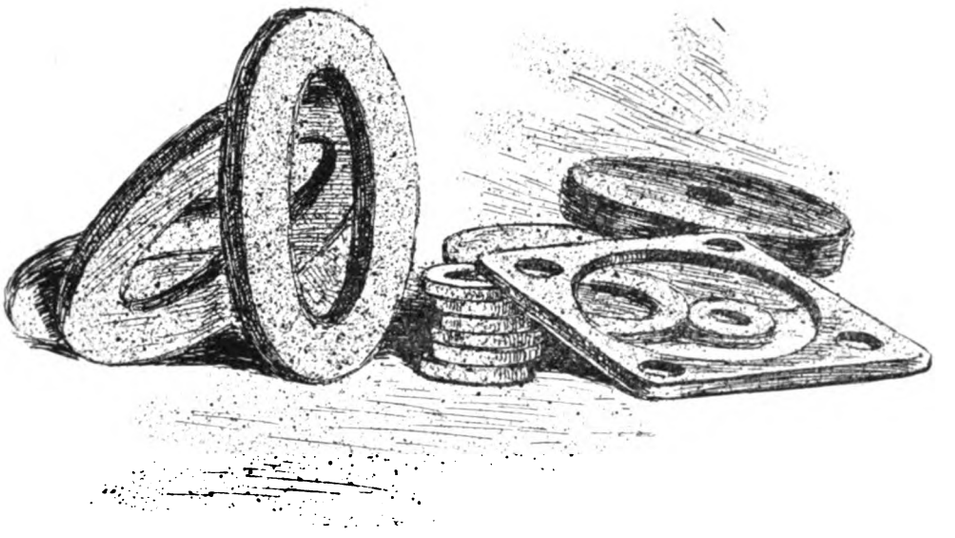
Seven passenger car	2075
Phaeton, four passenger	1975
Roadster, two passenger	1975
Landaulet Coupe, three passenger	2500
Inside drive Limousine, five passenger	2800
Standard Limousine, seven passenger	3250

All prices are F. O. B. Detroit and include standard equipment

CADILLAC MOTOR CAR CO., DETROIT, MICH.

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Booth FELT



THE material from which Booth Felt Washers and Gaskets are made is the best grade of all-wool felt. Difference in materials is what makes the difference in the cost of washers.

Difference in materials is what makes a good or poor washer.

We make cheap washers as well, but for automobile work we strongly recommend the use of nothing but Booth all-wool felt washers. The difference in the cost between cheap shoddy washers and Booth Felt Washers is practically nothing per car—and no great item even for a year's output.

The trouble Booth Felt Washers save your dealers and customers makes the use of shoddy washers poor economy.

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Canadian Office and Factory
The Booth Felt Co., Ltd., Gananoque, Ontario

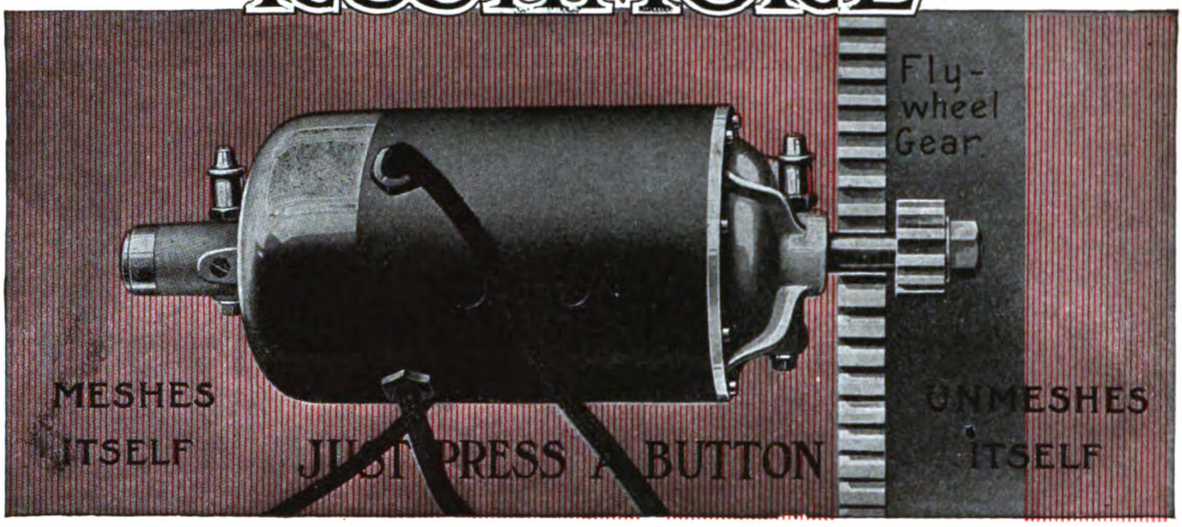
Booth FELT

Booth FELT

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RUSHMORE



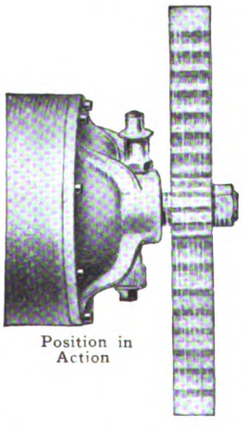
PERFORMANCE

Recent tests of a Model B Rushmore Starter, embodying our latest refinements in construction, show that our previous statements as to its power were too modest.

The tests were made by a leading automobile manufacturer, on a 6-cylinder car of 4½ x 5½ inches, bore and stroke. Using 100 amperes at 5.6 volts, the Starter turned the engine over steadily at **108 R.P.M.** (We have hitherto claimed only 80).

With three passengers, in fourth gear and with full compression in the cylinders, the Starter propelled the car on a level dirt road at about 3 miles per hour, taking a current of 126 amperes at 5.5 volts.

In first gear, with the same passengers, the Starter propelled the car up a runway of 20 per cent. grade into a second-story shop, taking a current of 350 amperes.


Position in Action

The Starter used in these tests weighs 47 lbs. complete without switch. It acts directly on the flywheel, without intermediate gears.

Another make of starter, weighing nearly 70 lbs. and having a very well-built hard steel and ball-bearing reducing gear made by the car manufacturers, turns the same engine at only 75 R.P.M., using the same current and voltage. Thus the Rushmore equipment shows 44 per cent. higher speed with a much lighter weight.

Even with equal current, the Rushmore Starter would save the battery very greatly by giving a snappier start. If 75 R.P.M. were considered sufficient, a lighter and cheaper battery, giving about one-third less current, could be used.

The Model A Starter, weighing 62 lbs., delivers a maximum torque up to 600 inch-lbs.—i. e., 600 lbs. at the flywheel rim with a 2-inch pinion, or 400 lbs. with a 3-inch pinion. We recommend it for the biggest engines on wheels, and for large motor boat engines.

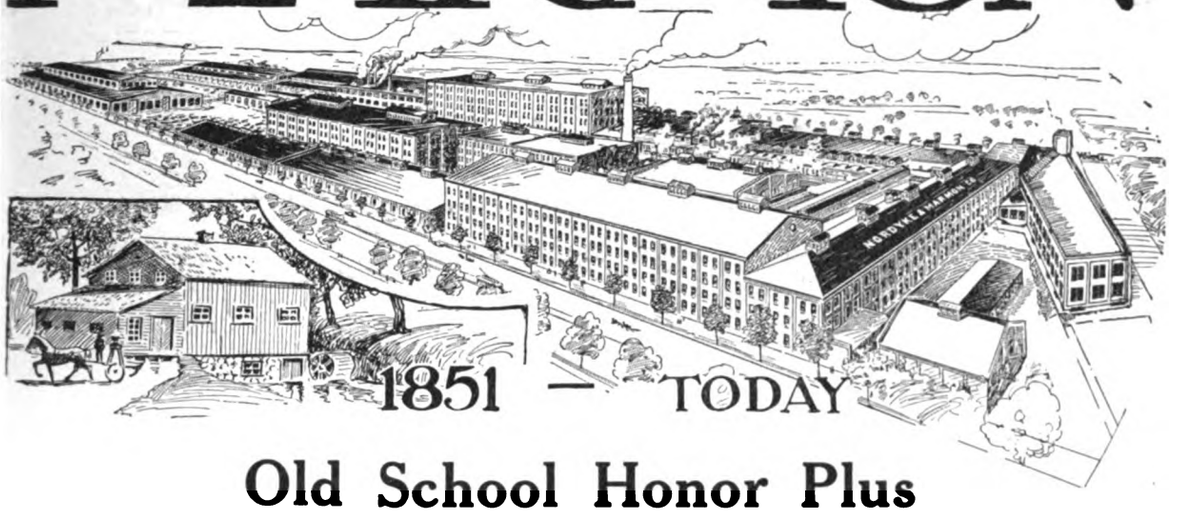
Rushmore Dynamo Works, Plainfield, N. J.

LONDON PARIS BERLIN

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"The Easiest Riding Car In The World"

MARMON



Old School Honor Plus The Efficiency of Today

PLAIN, old-fashioned honor has been the foundation of many industrial successes. An honest effort to make the best possible goods to meet the requirements of the purchaser, a fair price placed upon these goods and square dealing with the buying public—these are among the things covered by that one word "honor."

Twelve years before the battle of Gettysburg, Nordyke & Marmon Company began the manufacture of machinery to meet highly exacting requirements. Since then more than forty manufacturing concerns have entered the same field, some with large production and low prices, others with special methods of obtaining business, and others with various propositions. Today the Nordyke & Marmon Company, with no variation of its policy, is among five survivors of this varied competition. During the sixty-two years, it has never marketed a product built for cheapness or with any other end in view than the best possible service to the purchaser.

Has this "old-school honor" paid? The answer lies here—in one of the leading manufacturing institutions of the great Middle West, a concern owned by the family that founded it, a company with sixty-two years of constant, healthy growth and unimpaired credit.

In the early days of the automobile industry Nordyke & Marmon Company began to build motor cars, the best that brains, experience, money and honest intent could produce. Always abreast and sometimes in advance of the marvelous development of this new device for the pleasure and convenience of mankind, the Marmon has become known the world over as among the very few cars classed in the first grade. It will continue among the best so long as this great manufacturing institution endures.

The great manufacturing plant of Nordyke & Marmon Company, equipped and organized at every point for up-to-the-minute efficiency, is open to your inspection. You cannot visit it without gaining from every department the indelible impress of years of sound, successful experience—without carrying away with you the greater confidence in the future and product of such an organization.

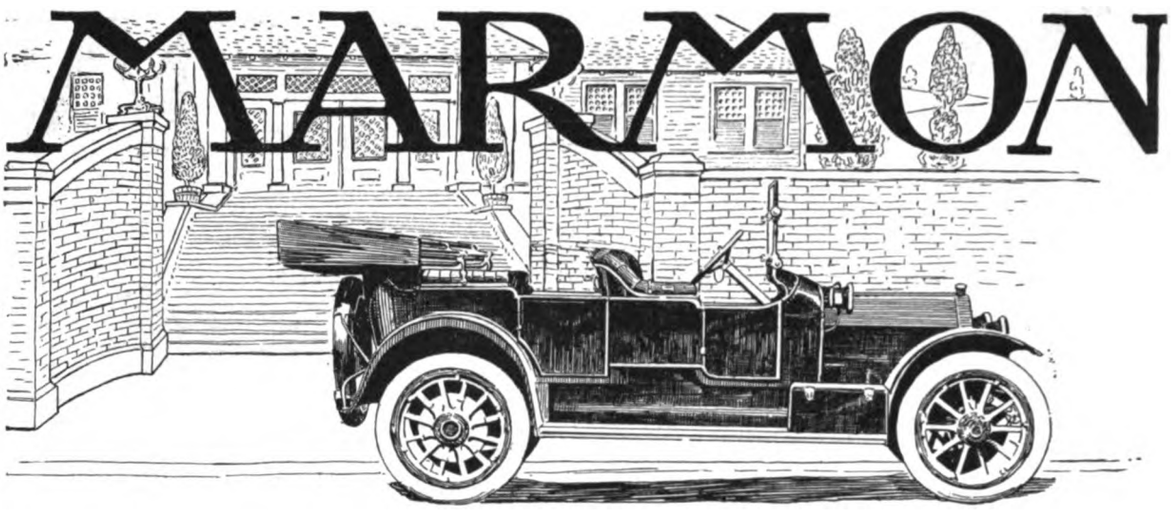
Nordyke & Marmon Company
Indianapolis (Established 1851) **Indiana**

"Sixty Years of Successful Manufacturing"

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"The Easiest-Riding Car In The World"

MARMON



The Marmon "32" Five Passenger Touring Car

Price, $3,000. Four cylinder, 32-40 h.p., 120" wheel base, body types and equipment to meet every requirement. A rational, logical car for touring and city use. Years of satisfactory service have proved its economy in tires, fuel and upkeep—plus smooth, delightful operation and durability.

ANNOUNCEMENT

For the coming season the Marmon "Thirty Two" offers all the latest ideas in equipment, style and appointment.

The features of exclusive Marmon design, the scientifically selected materials and conscientious, expert workmanship, attain their highest development in this car.

The experience of sixty-two years as successful manufacturers of high grade machinery stands back of the refinement and mechanical perfection of the Marmon "Thirty Two."

A few of its many superior features:

Marmon "32" Motor—Proved the best by comparison with the finest products of European and American makers in the winning of the most arduous of long-distance races and road tours, and backed by years of consistent service in the hands of owners. 4 cylinder, 4½ inch bore, 5 inch stroke, 32-40 h.p., two spark, dual ignition system, large valves, abundant power combined with great flexibility and economy of fuel.

Lubrication—Marmon automatic force-feed, direct to bearing surfaces through hollow crank shaft. Widely copied but never equaled. Simple and reliable reducing oil consumption and wear to the minimum.

The Most Practical Three Point Motor Suspension. Straight Line Shaft Drive. Improved Cone Clutch.

Transmission—Unit with rear axle. Simple, strong, easy of access.

Internal Expanding Brakes—Two sets on each rear wheel, 403 square inches of braking surface. Clean cut design. Accessible and effective adjustment. Acknowledged by official investigation the most effective of braking systems.

Rear Axle—Marmon design and construction. Pressed steel housing, light, strong and durable. Accessible differential.

Left Hand Drive—with center control and every feature for safe and easy operation, making a car that a woman may drive with assurance—a car that may be trusted in any emergency.

Bodies—The individual design and finish of the Marmon "Thirty Two" bodies add a distinctive tone of beauty and refinement. Distinguished in appearance they indicate the high character of every detail of the car. They are made with every care, of finest materials, fitted with every appointment and extra deep hand-buffed upholstery. The running boards are clean, with metal boxes for batteries and tools set in front fenders.

Equipment—Electric starting and lighting system; tailor made top with dust boot and curtains; built-in windshield adjustable for ventilation; black and nickel finished; speedometer and clock combination; electric horn with button on steering wheel; electric light to illuminate entire dash; shock absorbers front and rear; single tire carrier rear and one extra demountable rim; coat rail; foot rest; full assortment of tools, and electric extension lamp. Box in rear and compartments in tonneau provide ample storage space for curtains, tubes, pump, jack and other articles.

Prices—Five-passenger Touring Car $3000; Four-passenger Suburban $3000; Two-passenger Roadster $2900; Speedway Type Speedster $2850; Limousine (seats seven) $4000; Landaulet (seats seven) $4100; prices f. o. b. factory, Indianapolis, Ind.

Detailed Information on Request

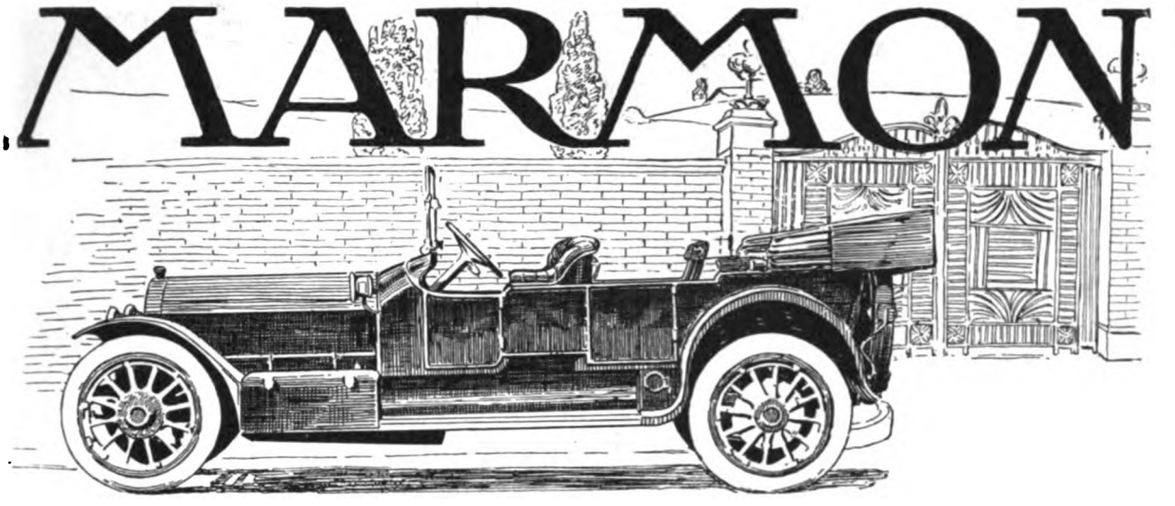
Nordyke & Marmon Company
Indianapolis (Established 1851) **Indiana**

"Sixty Years of Successful Manufacturing"

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"The Easiest Riding Car In The World"

MARMON



The Marmon "48" Seven Passenger Touring Car

Price, $5,000. Six cylinder, 48-80 h.p., 145" wheel base with short turning ability eliminating the old objections to long wheel base. Body types and equipment to meet every requirement. The only big car with small car advantages. Wonderful riding qualities and surpassing power and flexibility. A car developed by years of exacting tests.

ANNOUNCEMENT

The more a man knows about motor cars—the more he will appreciate the Marmon "Forty Eight."

It is distinguished by its exclusive features as the most complete, luxurious and capable of all high-powered cars.

It has abundant power in proportion to weight. It combines small car ease of operation with the comfort and luxury of big car smoothness, flexibility and easy riding.

A few of the distinctive features of the Marmon "Forty Eight":

Marmon "48" Motor—The finest example of modern motor construction—silent and free from vibration at from three to sixty miles per hour on high gear—tremendously powerful—wonderfully flexible and responsive. Six cylinders, 4½ inch bore, 6 inch stroke, two-spark dual ignition system, large valves, enclosed, silent chain connection to electric starter.

Lubrication—A further development of the famous Marmon automatic force feed oiling system, used first in this country by the Marmon and proven successful by over ten years of service on Marmon cars. The oil is carried through hollow cam-shafts direct to the cam-shaft bearings as well as through the hollow crank shaft direct to the main bearings, connecting rod and piston-pin bearings.

Three Point Suspension. Straight Line Shaft Drive. Multiple Disc Dry Plate Clutch.

Transmission, Rear Axle and **Brakes**—of proportionate size and following the same general design developed on the Marmon "32" and proved by the most strenuous tests of racing on track and road and in the hands of owners.

Front Axle—One of the many exclusive features of this distinctive car. The vertical spindle is placed in the direct, center line of the wheel. It makes the safest, surest and easiest steering mechanism ever devised. It permits this 145 inch wheel-base car to be turned in a remarkably short radius—gives you all the pleasure and comfort of big car operation combined with the advantages of small car ease of control.

Simplicity and **Accessibility**—No other high powered car on the market offers such freedom from complication of mechanism—gives so many aids to sure, quick and simple adjustment of working parts.

Capability—In the design and manufacture of this car, the underlying idea was to meet every requirement of the discriminating buyer, who after long years of motoring experience has come to the exacting point of knowing and demanding the best. The Marmon "48" is alike the car supreme on the fashionable boulevard or on the most tortuous road or hill that long-distance touring provides. In all-round capability no car can equal its records of performances.

Bodies—The low-hung, graceful Marmon bodies mark a new note in design, distinctly in advance of anything heretofore presented to the public. In the beauty of line, in the comfort of even balance, well proportioned springs and deep upholstery and in luxury of appointment and finish, they leave nothing to be desired. The appearance is enhanced by clean running boards. Ample storage is provided for luggage and supplies.

Equipment—Electric starting and lighting system; extra quality tailor-made top with dust boot and curtains; new type windshield, designed as part of the dash with provision for abundant ventilation; speedometer and clock; electric light to illuminate entire dash; electric step light under tonneau doors; electric emergency lamp with long extension cord; electric horn, power tire pump, shock absorbers front and rear, tire carrier rear and extra demountable rim, coat rail, foot rest, full assortment of tools.

Prices—Seven, Five, Four and Two-passenger Body Types $5000; Limousine (seats seven) $6250; Berline Limousine (seats seven) $6450; Landaulet (seats seven) $6350; prices f. o. b. factory, Indianapolis, Ind.

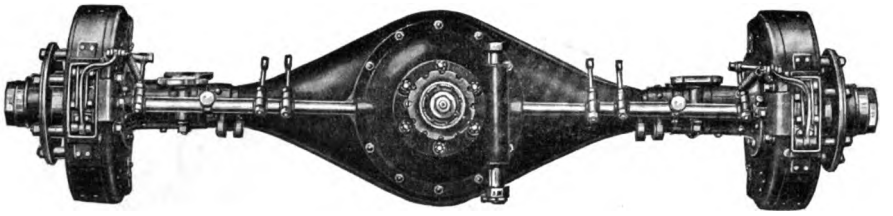
Detailed Information on Request

Nordyke & Marmon Company

Indianapolis (Established 1851) **Indiana**

"Sixty Years of Successful Manufacturing"

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New Lewis single-bearing full-floating type rear axle. For cars up to 4,000 lbs.

THIS axle presents the graceful lines, the rugged strength, and the refinement of detail that mean axle success for the car manufacturer and everybody concerned. It is "Lewis Quality" throughout. Note the following details:

Housing made from two stampings 3/16 sheet steel autogenously welded. Reinforced internally by tubes which carry the wheel bearing, extending through the main housing as close to the differential as is practical and supported at this point by elliptical plates embracing the wheel bearing tube and extending to the main housing walls to which they are welded.

Adjustments can be made with ease—and the simple method by which axle can be dismounted insures quietness even when the work is done by unskilled labor.

Driving shaft is one-piece solid construction 1⅜" diameter made from 3½% hot rolled nickel steel heat treated. Will carry any load it is designed for.

Bearings: New Departure double roll ball with bronze ball separator. Differential bearings equipped with ½" balls; bearings with ⅝" balls. THIS AXLE IS ALSO DESIGNED TO ACCEPT ANNULAR BEARINGS.

LEWIS QUALITY

Brakes: Internal and external 16" diameter by 2¼" face. Facing impervious to oil, mud and water. Full floating, band type, toggle operated, very powerful.

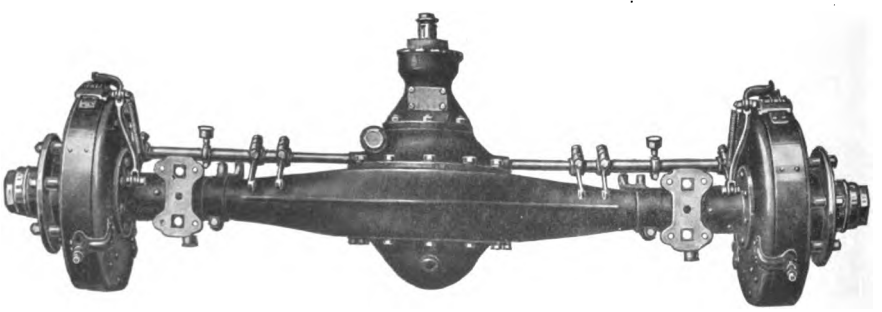
Lubrication of this axle is exceptionally efficient. The oil and grease get to where they are needed—and stay away from where they are not needed! Think over this point and get details.

Gears: Main driving gear is 20-point carbon open hearth steel forging case-hardened and ground. Driving pinion is 3½% nickel steel case-hardened and heat treated—taper hole ground where fitted to pinion shaft. 1 5/16" face, 4 diametral pitch. Differential gears are 5-7 pitch and ⅞" face, bevel type with four pinions.

You will see at once that we have an axle of the very latest type with many exclusive features covering the very points you are most deeply interested in. Full details will be sent on request. Write.

Lewis Spring and Axle Company

JACKSON, MICH.



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"Automobile—
a motor vehicle"
From Webster's New Standard Dictionary

Trade-Marking a Famous Motor

Engrave on the tablets of your memory this trade-mark. It is the stamp of a good motor and a good motor is the solid foundation of a good automobile. The dictionary makers realized this, when they defined an Automobile as a "Motor Vehicle"; all men who motor acknowledge it; and more than 50 of America's leading motor vehicle makers proclaim it by building their cars upon the sure groundwork of the Continental Motor.

¶ A weak foundation has ruined many a costly edifice. Down to bed rock must go the substructure; down—in the case of a motor vehicle—to the hard and fast assurance of a motor with power, with speed, with certainty of service, with sales prestige, with long years of life-span.

¶ The name of the motor—symbol of power— reveals the character of the car. For the motor is the key to the whole construction—the costliest and most vital factor. Every motorist should know this, and Continental advertising is going to make this knowledge public property.

¶ Continental motors date back to 1903. They have perennial youth in design—the maturity of age in experience. Over 75,000 are now in use—developing, daily, more than six times the horsepower taken from Niagara. Best known cars —cars that have conquered the world's markets—have swept to success carrying the Continental Motor.

¶ To the companies making these cars, their engineers as well as our own, belongs the proud distinction of having made "Continental motors America's standard." For the counsel of these many engineers, some of whom not only stand as leaders in their profession but are individually known to every American who reads, has had much to do in the final perfecting of Continental motors.

¶ These are the far-seeing, level headed men who, building for the competition coming, have already specified over 40,000 Continental motors for 1914.

¶ Not made to meet a price, not built to shatter records of quantity, Continental motors are constructed to fulfill a service ideal—to be a true foundation for a worthy motor vehicle.

¶ For this we trade-mark our product.

Continental Motor Mfg. Co.

Largest exclusive motor builders in the world

Factories: Detroit, Muskegon, Mich. Detroit, Michigan

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Cole – "The Standardized Car"

Why did COLE buy the BIGGEST AD ever printed?

Why did he literally buy the **most expensive advertising** medium in the world by the yard?

Why did he spend $30,000 in one smash?

He did it for–YOU

COLE has always been the strongest champion of the automobile dealer in America. Cole has always contended that the foundation of the automobile industry is the dealer, and that in order to succeed any automobile factory must consider the dealer **first.** The only time the dealers of America ever got together in a convention with the idea of figuring out how to make more money was at the call of J. J. Cole. You have possibly heard J. J. Cole say—"The secret of success in this business is building a car on which the dealer can build his own business." You have said to your factory time and again—"I could make money if you would give me a car that wouldn't consume all my profit in service." The Cole's answer is—**"The Standardized Car"**—the car made from radiator to rear axle from the best stuff in the world, and by the greatest specialists in the world—the car that **leaves** your profits with you.

Why the Six-Page Ad in The Saturday Evening Post?

BECAUSE the Post is the world's one great, permanent automobile show. Because two million people visit this show every week—most of them successful people—a great mass of men and women who **buy** automobiles from **you.** This being so, and the Cole being game to the core, and having your interest at heart, the Cole bought more floor space at this show than any automobile maker ever bought. The Cole struck a heavier blow for you than any automobile maker ever struck—for behind this blow was the tremendous force of this great standardization idea, which is exclusive with Cole, and because Cole was fresh from one of the most successful automobile years an automobile maker ever enjoyed—the profits of which were shared in by Cole dealers everywhere.

The Cole advertising campaign last season was recognized—even by competitors—as the best campaign of the year, and it did the business. It cleaned out the stuff. On July 1st there wasn't a car left on the Cole factory floor. That's the proof of advertising. Now, the same men who did the Cole advertising last year are doing it this year—they are Cole men 100 per cent—they live Cole—they know Cole—and when they tell the unmitigated truth about Cole, prospects are bound to fall because no man can resist the **truth.**

You are a dealer. You know what this means. You know it means that these Cole motor cars were **sold,** and that the men who sold them made money. Proof—fully 100 per cent of all Cole dealers applied for renewals for the coming season. The only thing in the world which makes it possible for us to talk business with you is the fact that we have doubled our output.

Cole Dealers Everywhere Are Making Money

ASK them—ask their bankers. **Now, how about you?** Only your private ledger can tell whether or not it is time for you to **hook up with Cole.** If you didn't make money last season it probably was not your fault. Who knows, maybe your factory was still doing business on the old lines—putting all the burden on the dealer—making you find your own prospects, leaving you alone to fight it out with your banker, making you work out for yourself the problems of its car, leaving you alone to sink or swim.

By Cole's methods—the prospect is brought to your salesroom with his checkbook in his hand. Will you take his check, or will you let that competitor of yours across the street see the light first and take that buyer's check from you, thereby making you **compete** instead of **share with** the livest automobile organization in the industry? Perhaps this coupon is the nugget which lies above the pay dirt. Dig—fill it out. Act **now.**

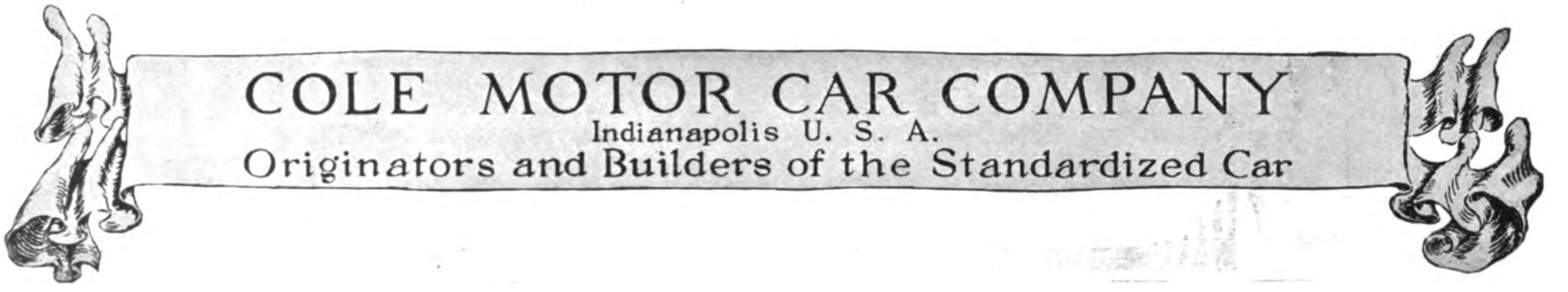
COLE MOTOR CAR COMPANY, Indianapolis, Ind.

Gentlemen:—Your way of making money for the automobile dealer looks good to me. I am certainly ready to talk to any organization which is game enough to spend $30,000 in one smash for the good of the dealer. When can I see you?

NAME _____

ADDRESS _____

TOWN _____



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THE ATTERBURY LINE



Dealers gain a great advantage by handling a line of trucks which have years of practical experience behind them.

Years of practical experience in the sense we use it, does not mean a company's claim to have experimented from one to four or five years before putting a truck on the market. It means the experience of having built trucks and sold them—trucks that were designed and built in a factory and which went out into actual service and made good.

That is what is meant by years of practical experience behind the Atterbury line. In ten years of actual truck production, the Atterbury line has never had a weak member.



Each succeeding year has seen improved construction and truck refinements. Such betterments came as a result of contact with conditions, not the uncertain theory without chance for practical application.

The Atterbury Line—delivery cars and trucks from fifteen hundred pounds to five tons capacity—has a tremendous prestige and the weight of ten years of successful practice to work in your favor.

Write for particulars regarding our selling agreement and unassigned territory.

ATTERBURY MOTOR CAR COMPANY

BUFFALO **NEW YORK**

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BAILEY
ELECTRIC SYSTEM

Refinement

No electric dynamo so far produced has the refinement which is characteristic of the Bailey.

The reason for this is, that Benjamin F. Bailey, the inventor, is an Electrical Engineer who not only has a good practical knowledge of electric lighting requirements, but the theoretical training and experience necessary to eliminate the trappy devices with which other generators are encumbered.

For instance, his mercury switch has displaced all troublesome methods of control, such as reverse current relays, magnetic switches, vibrating contacts, delicate rheostats, slipping clutches, corroding platinum points.

He has so designed the generator that the current output automatically increases the moment the headlights are turned on, to a point sufficient to meet the increased demand.

The machine is only 5 1-2 in. high, 5 1-2 in. wide and 7 1-2 in. long and weighs only 17 pounds.

It will develop almost twice the current that other generators of this size will.

Send for our booklet, "Electric Lighting," which explains it in detail.

Also describes the Bailey Combination Ignition Starting and Lighting unit.

PRICES :

Model L1, suitable for car lighting systems requiring 50 candle-power or less.....**$75.00**

This price includes generator, wiring, harness, 60-ampere hour storage battery and all controlling switches ready for installation.

Model L2, suitable for car lighting systems requiring 60 to 100 candle-power.....**$125.00**

This price includes generator, wiring, harness, 80-ampere hour storage battery and all controlling switches ready for installation.

PRICES F. O. B. GRAND RAPIDS

Bailey Electric Company GRAND RAPIDS MICHIGAN

WILSON & COSGROVE, Exclusive Sales Agents

Suite 6, Goldberg Building
DETROIT, MICHIGAN

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AS SURE AS

THE WHIRL of THE WORLD

An Electric STARTING MOTOR
Modern-Efficient-Reliable
For Practically
every type of
Automobile
Engine.

AUTO-LITE ELECTRIC STARTING and LIGHTING SYSTEM



TOLEDO

Will spin a six cylinder engine, 3¾" bore by 5¼" stroke, compression 60 lbs.—at over 100 revolutions per minute (greatly above necessary speed for positive starting) with a current demand of 95 amperes at 6 volts.

THE PIONEER 6 VOLT STARTING SYSTEM

The Electric Auto-Lite Company, as an organization, is financially and mechanically able to handle contracts of any size—to furnish apparatus which will meet your requirements in every detail—whether for starting, lighting or ignition purposes.

Get This Book

Send for our "Handbook on the Care and Operation of Automobile Electric Systems," a book so full of interesting information on all modern electric systems that no automobile owner can afford to be without it.

Explains in detail, functions of the various parts—how to locate and remedy troubles of all kinds—embraces all electrical automobile systems.

The large operation chart which it contains is alone worth the price.

Regular price 50c. Will be sent to you for 10c in stamps if you use this coupon.

The Electric Auto-Lite Company
116 Michigan Street, Toledo, Ohio
BRANCHES: New York Detroit Kansas City San Francisco

This Coupon Saves You 40c

THE ELECTRIC AUTO-LITE CO.,
116 Michigan St., Toledo, Ohio.

Enclosed find 10c in stamps for which please send me your handbook.

Name .....

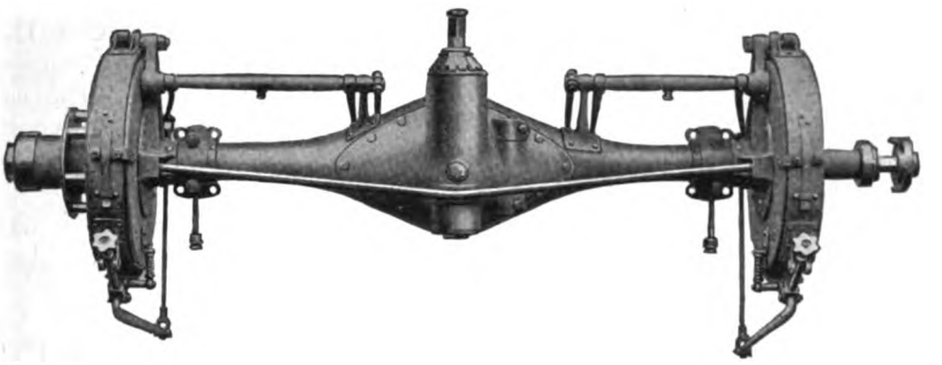
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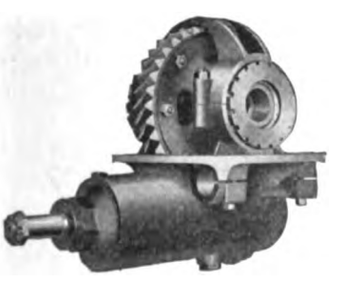
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"American" Axles

With the Famous Lanchester-Daimler Worm Drive



THE WORM DRIVE—for either gasoline or electric pleasure cars—reaches its highest form of efficiency when the Lanchester-Daimler type of gear is mounted in a full floating "American" Axle.



The superiority of this unit will be recognized instantly. It embraces the Worm Drive that has led the development of this gear abroad, and the highest class axle in America.

The combination carries with it the assurance that only the finest and best materials have been used—and assembled by highly expert workmen.

An "American" Axle containing the Lanchester-Daimler Worm Drive unites the best English and American shop practice. Fitted throughout with the finest class of foreign ball bearings, it is both silent and marvelously long lived.

We hold exclusive American rights as axle manufacturers to the Lanchester-Daimler Worm Gearing

THE AMERICAN BALL-BEARING COMPANY, Cleveland, Ohio

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Hartford Cone Clutches

REGARDLESS of whether a manufacturer's policy calls for quantity production or a limited number of cars, the quality maintained in the manufacture of Hartford Cone Clutches is economy for all concerned.

Two great features are essential to the successful performance of any clutch.

The First is "Efficiency to handle the work imposed upon it" regardless of the user's skill as a driver.

The Second is "The longevity of this sort of efficiency"—the life of clutch efficiency must equal the life of the car at least.

Any clutch which does not possess these two properties is bound to "back-fire" very seriously at both the car manufacturer and dealer. The back-fire from an incompetent clutch assembly is just as serious to those who make and sell high-priced cars in limited numbers as to those who make and sell lower priced cars in great numbers.

We have realized this always— that if our cone clutches caused a back-fire of public opinion, injuring the car's reputation, its manufacturer would suffer, its dealer would suffer and so would we as makers of the clutch.

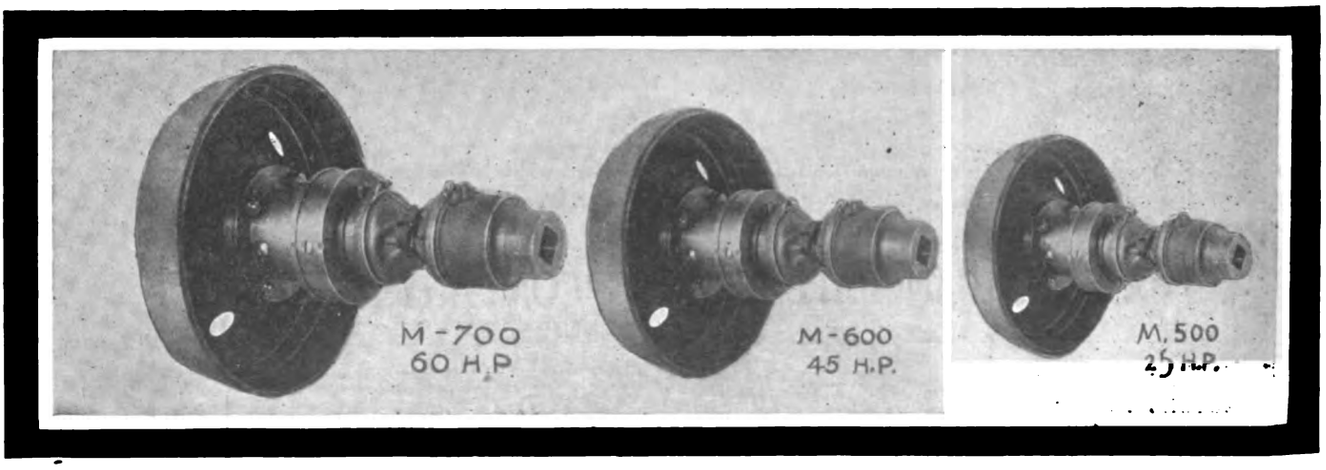
How do we know that Hartford Cone Clutches have invariably given the best of satisfaction?

First—because they are correctly designed and manufactured with the utmost skill and nicety.

Second—because we never have lost a customer. On the contrary, each succeeding year has brought us new customers.

Just as the clutch is the intimate point of contact between a car and its driver, so is Hartford Quality the intimate point of contact between us and our customers.

Hartford Auto Parts Company
HARTFORD, CONN.



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Stewart Speedometer

MAGNETIC PRINCIPLE

The Real Test

The older the "Stewart" Speedometer gets—the more popular and prominent it becomes.

With over 800,000 "Stewarts" in use, as against a scant 200,000 of all other makes combined, "Stewart" superiority must be conceded.

When such a vast majority voluntarily place their unqualified O. K. on an article, then that article must be the best by the very normal and natural test of giving perfect satisfaction.

The Stewart Speedometer Factory

1949 Diversey Blvd.

Chicago, U. S. A.

Service Stations in all important cities all over the world

The most popular Speedometer in the World

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A Night in the Woods

Number four of the Hupmobile series of paintings now appearing in the big periodicals, striking a new note in automobile advertising.

How we give the dealer the co-operation he needs

Hupmobile

Hupmobile "32" Touring Car
$1000 f. o. b. Detroit
In Canada, $1180 f. o. b. Windsor

Four-cylinder motor, cylinders 3¼-inch bore by 5½-inch stroke, cast en bloc. Unit power plant.

Selective type transmission, sliding gears.

Irreversible, screw and double nut steering gear.

Full-floating rear axle.

Twelve by two-inch brakes, external contracting and internal expanding.

Wheelbase, 106 inches.

Tires, 32 x 3½ inches.

Equipment of windshield, mohair top with envelope, Jiffy curtains, speedometer, quick detachable rims, rear shock absorber, gas headlights, Prest-O-Lite tank, oil lamps, tools and horn.

Finish, black with nickel trimmings.

"32" Roadster	**$1000**
In Canada, $1180	
"32" Six-Passenger	**$1200**
In Canada, $1450	
"20" H.P. Runabout	**$750**
In Canada, $850	

F. O. B. Detroit, *or Windsor*, fully equipped

The man who sells the Hupmobile enjoys advantages which are as helpful as they are unique.

He has a car that is practically without competition; and he has back of it and back of him, a most complete system of advertising and sales co-operation.

Perhaps our ideas of the dealer's relation to the factory differ from those that usually prevail at the factory; but we firmly believe, from our experience, that they work to the benefit of both dealer and manufacturer.

That is why we endeavor to fill the dealer with the spirit that imbues the entire factory organization.

That is why we want every Hupmobile dealer to feel that he is a member of the Hupmobile family—not merely a selling representative with the task of disposing of a number of cars alone and unaided.

We want every Hupmobile dealer to have the benefit of our selling experience and our sales ideas and methods.

We spend thousands of dollars annually to advertise the Hupmobile in the most forceful way we know, to the greatest number of people.

We spend other thousands in sales suggestions to our dealers, for a house journal that the dealers prize highly for its merit, and in maintaining a field sales and service organization that is constantly in touch with Hupmobile dealers throughout the country.

That is our part of the work; and that it is performed and appreciated is evidenced by the co-operation we get from the dealers and in Hupmobile sales.

Team-work counts biggest and best in any business; and team-work is the keynote of the Hupmobile organization's efforts.

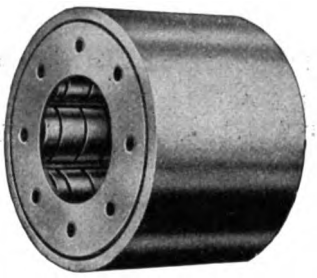
Hupp Motor Car Company, 1254 Milwaukee Ave., Detroit, Mich.

Canadian business handled by Hupp Motor Car Co., Ltd., Windsor, Ont.

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HYATT QUIET BEARINGS



LONG SERIES

The Short Series, High Duty Type, of the Hyatt Roller Bearing is furnished in shaft diameters from one to three inches inclusive, and in length from one inch upward. The Long Series is furnished in the same diameters and in lengths from two to three and one-half inches.

Special diameters and lengths to meet individual requirements, consistent with proper engineering practice will be furnished promptly.

Short Lengths are made possible in the High Duty Type through the use of nickel steel rollers, properly heat treated and ground, operating on solid inner and outer steel casings, also heat treated and ground. Heavy loads can thus be concentrated on short lengths.

HYATT ROLLER BEARING CO.

DETROIT. MICHIGAN

WORKS, NEWARK NEW JERSEY

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SPARTON

THE ELECTRIC SIGNAL DE LUXE



IF THE "SPARTON" PRICE WERE DOUBLED IT WOULD STILL BE THE GREATEST SELLING ACCESSORY IN ALL MOTORDOM

All are Motor driven by Big MOTORS. A DASH or UNDERHOOD Model for small or large cars alike. Finished in gunmetal or with gunmetal and brass or nickel projectors.

MODEL D Dash Type - - - - - - - - - -	$15.00
MODEL U Underhood Type - - - - - - - -	14.00
MODEL J Underhood Type - - - - - - - -	10.00
MODEL B Dash Type - - - - - - - - - -	10.00

We received bona fide orders for more than 10,000 "SPARTONS" within twenty-four hours after the list price was announced.

With each "SPARTON" is a stronger MAKE GOOD guarantee than is given with any other Motor Driven Electric Signal. We publish no price list on parts. Our Dealers are instructed to MAKE GOOD and return parts to us COLLECT.

Every "SPARTON" DEALER is protected in every way.

It's the best WARNING SIGNAL to sell—the hardest to sell against.

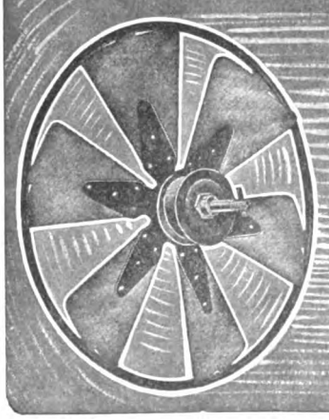
Our new "SPARTON" catalogue is worth having. May we send you a copy?

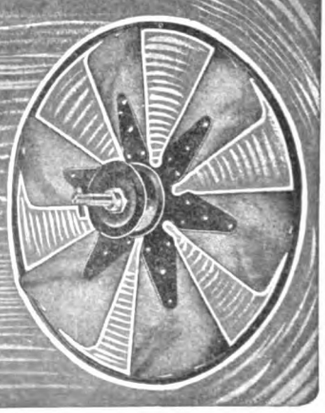
THERE IS MORE TO A GOOD AUTOMOBILE FAN THAN COOLING.

Quietness, ease of operation, durability and simplicity are the prime essentials demanded by the CAR BUILDERS.

In these important requisites our famous ONE PIECE BLADE RADIATOR FANS are the first thought of the Engineer who requires the best.

Our fan data, collected from knowledge of motor requirements the world over, is a veritable text-book on this most important problem. May we send you one with our compliments.

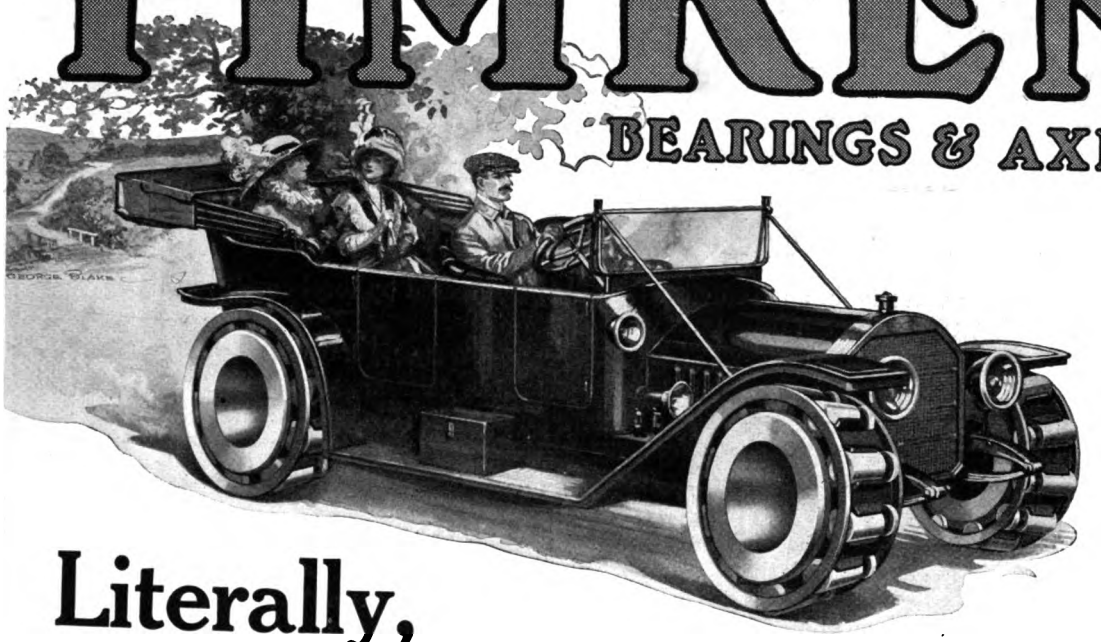




SPARKS-WITHINGTON CO.
JACKSON, MICH.

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TIMKEN
BEARINGS & AXLES



Literally, You Ride on the Bearings

THE actual size of the bearings is small; they are hidden away in the hubs of the wheels; good bearings need scarcely a thought. Yet they support the entire weight of the motor car—whether a light runabout or a heavily loaded truck.

Every roller in a Timken Bearing (average size for pleasure car) revolves 3.59 times during each revolution of the wheel, two thousand and thirteen times each mile of travel.

In 153,618 miles covered by N. W. Curson's car, in and out of Sacramento, each 4/10-inch roller has turned 309,229,008 times. Yet his Timken Bearings are still giving perfect service.

Curson's mileage record is extra long. Few would care to drive that far. Yet you do want to know that the bearings will stand up and give satisfactory service for the life-time of your car. Because cars today are being built for years of work.

Timken Tapered Roller Bearings have many records of long, severe service. In every part of the land motor car enthusiasts will tell you of the satisfaction they give.

Timken Bearings keep transmission, driving shaft, axle shafts, driving and differential gears, working with that smooth, "sweet," quiet uniformity that delights the "motor-wise" owner.

They withstand tremendous shocks, end-thrusts and stresses which would otherwise rack the entire vehicle as it bumps over a stone, drops into a rut, or swings rapidly 'round a corner.

Timken Tapered Roller Bearings do these things not only when they are new, but during the entire life of the car.

Get the whole interesting story of axles and bearings in greater detail by writing for the Timken Primers, T-3 "On the Care and Character of Bearings," and T-4 "On the Anatomy of Automobile Axles." Sent free, postpaid, from either address below.

Do you realize that the axles and their bearings are the most important parts of your motor car?

THE axles and bearings carry the load; are nearest the ground; are the first to meet every shock and stress.

On the front axle depends safe steering; it meets every emergency head on; it is the one part of the car where reliability is absolutely essential to your safety.

The rear axle is the one part of the car that performs more than a single function. It carries the load; it applies power to the wheels; it checks momentum with its brakes; its differential gears allow you to turn a corner safely.

Over 700 Separate Pieces in a Rear Axle!

TO be exact there are 723 pieces in a Timken-Detroit Rear Axle, and each piece, large or small, has an important duty to perform.

Timken experience, dating from the first motor car, proves that all of the 723 pieces are needed to make the most efficient axle.

They are made with such minute exactness that they fit together like the parts of a watch, forming a unit with the strength of a giant, the suppleness and elasticity of an athlete, the smooth, easy, quiet operation of a perfect mechanism.

It needs Timken-Detroit design, equipment, organization and experience to insure this result.

Starting at the Foundation.

TIMKEN starts at the foundation—an expert engineering staff that co-operates with the engineers of the motor car maker. Timken brings to the car builder's problem the specialized knowledge gained only by years of exclusive axle and bearing study and experience.

The Timken Roller Bearing Co.
Canton, Ohio
The Timken-Detroit Axle Co
Detroit, Mich.



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Regal

Your Problem—Our Solution

As a dealer you have many individual problems—created by local conditions. But primarily, this is the big issue with you:

The distributing of a car that will fit the needs and the pocketbooks of 90% of the car-purchasing public.

And here's a truthful, significant fact that commands your serious attention:

Up until June, the majority of automobile dealers in this country who actually sold their allotments, carried cars that sold for less than $1,200.

Among the successful ones, in many sections of the country, were dealers in

Regal Cars—Selling Around $1,000!

The solution to your problem is simple.

Become a Regal dealer. Regal cars challenge comparison in point of constructional superiority, efficiency, dependability and beauty.

Our Underslung Cars Are Favorites the World Over

The Regal Underslung cars insure a maximum of safety. They are *built to* and *do overcome* the dangers of skidding and "turning turtle." A Regal will cling safely to a 60° embankment.

You can prove that Regals conduce to gasoline and tire economy. The straight shaft drive transmits all power to the rear axle. The distinctive spring construction greatly reduces the wear on tires.

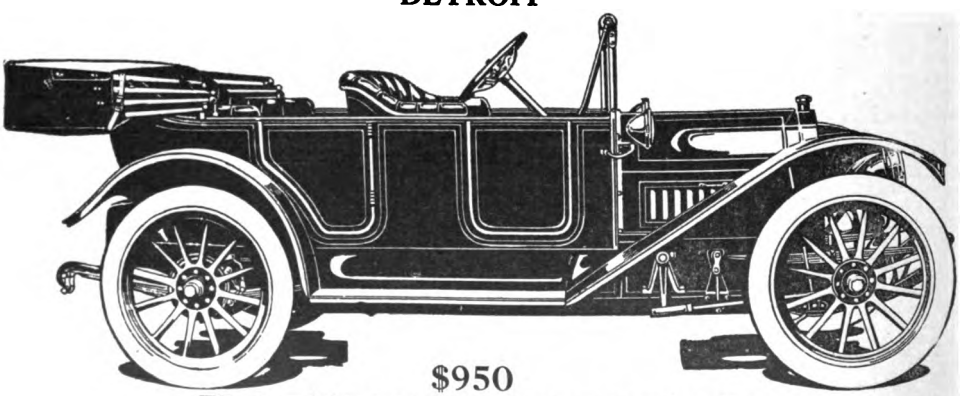
You can point to the low, sweeping, rakish lines of the Regal Underslung, and know that in point of beauty it is unchallenged.

Our line is broad and meets all demands. The Regal prices are all around the $1,000 figure. Our Underslung Touring Car and Roadster are favorites all over the world.

We have a good car, a good price and a good proposition for wide-awake, progressive dealers. Write us today, and we will explain our plans immediately. It will obligate you in no way. Get in touch with us at once.

Ask for Catalog N.

Regal Motor Car Company
DETROIT



$950

The Regal Model "T" Underslung Touring Car

Extra equipment, top, windshield and speedometer — $75

(98)

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BOSCH PLUGS



AS GOOD AS BOSCH MAGNETOS

IN the 500-Mile Sweepstakes 80 per cent. of the ten prize winners used Bosch Magnetos, 70 per cent. used Bosch Spark Plugs. The showing made by Bosch Magnetos, Bosch Plugs, Bosch Cable, etc., in this race, as in their many preceding trials of national and international fame—was not an accident, not a mere chance performance, as could be recognized by the practically exclusive use of Bosch Products—but is proof conclusive of Supreme Quality.

To the Dealer in Motor Accessories This Means Much

It means the vivid and conclusive demonstration of Bosch Quality.

It means the maintenance of Bosch Supremacy.

It means even a greater spread of Bosch Fame.

It means big demand and ready sales of Bosch Spark Plugs.

In addition, Bosch Plugs are backed by an advertising campaign of national scope—a campaign broader, more persistent and more far reaching than that for any other spark plug.

To the dealer this means quick moving stock—and a high cash value for all stock on hand.

There is a fair margin of profit in the sale of Bosch Plugs, a margin that will repay any dealer for their handling.

There are New Quantity Prices on Bosch Plugs
Write for them to-day on your letterhead

BOSCH MAGNETO COMPANY
224 WEST 46 STREET NEW YORK CITY.
Chicago :: Detroit :: SanFrancisco :: Toronto



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Successful Sale of Used Cars

It is trite to say that the manufacture of automobiles has developed from a game to a business. Evidonce of this fact is patent on every hand. Continuous refinement of car details will still further disclose it.

One of tho most important foatures of the business and one of the greatost arguments which a manufacturer can offor for the oxcellonco of his product is tho successful salo of his used cars.

And one of the points on which such successful sales are largely governed is the PERMANENT SECURITY OF THE BOLTED-UP CONSTRUCTION.

To guarantee such security the SPRING LOCK WASHERS must be first, of proper size, i. e., of such section as to have sufficient holding strength; second, a steel of such analysis as will take proper heat treatment; third, a heat treatment of a nature calculatod to insure uniform excellence.

Are you protected on all three points?

THE NATIONAL LOCK WASHER COMPANY

CHICAGO, ILL.——————NEWARK, N. J.

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These Forces Will Sell Kelly Trucks for You

YOUR SALES

Prospective Purchasers

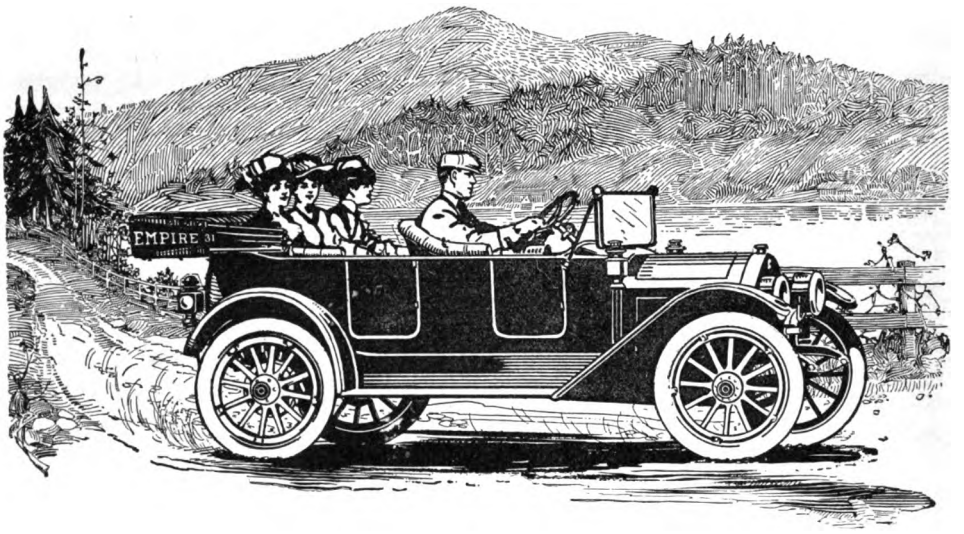
KELLY TRUCKS				Kelly Organization	
Mechanical Excellence	**Economy**	**Efficiency**	**Increase Field**	**Service**	**Sales Co-operation**
Latest design one and three ton water-cooled models.	Cut delivery costs.	Better service to customers.	Increase radius of operation.	Factory service stations centrally located.	Direct sales co-operation with dealers.
Best materials.	Save barn space.	Quicker deliveries than competitors can make.	Greater mileage.	Quick supply of parts, etc.	Aggressive advertising.
Superior workmanship.	Do not eat when idle.	Advertise owner's business.	Bigger loads.	New York Boston Philadelphia Chicago Cleveland Kansas City San Francisco Seattle Los Angeles Dallas Birmingham	Intelligent publicity.
Seven years of exclusive truck-making—not a "side-line."	Cut down number of drivers.	Can work as long as necessary.	More business for owners.	Gives 100% truck efficiency at all times.	We work on your own list of prospects with you.
The Kelly guarantee.	Decrease delivery cost in every way.	Board of engineers and transportation experts will solve your problems.			Field men to help.
Design two to five years ahead of all others.		Work well in any weather.			Special letters for your prospects.
					Real co-operation in every way.

Write immediately for our Agency Proposition

The Kelly-Springfield Motor Truck Company

1036 Burt Street, Springfield, Ohio

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EMPIRE

"The Little Aristocrat"

COMPLETELY EQUIPPED $950

Demountable Rims	Windshield	Prest-O-Lite Tank	Speedometer
Mohair Top	Robe and Foot Rails	Gas Head Lights	Oil Sight Feed
Top Envelope	Oversize Tires	Oil Side and Tail Lamps	Rear Double Tire Irons
Enclosing Curtains	Tool and Tire Kits	Pump and Jack	Horn under Hood
Shock Bumpers	Extra Rim	Dash Air Adjustment	Eisemann Magneto

It was the sturdy reliability and touring excellence of the Empire and its economy of up-keep and operation that brought the great flood of orders.

It is largely because of this that we are quadrupling our output for next season: and the increased production is under way right now.

We are prepared to allot territory which is now open. If you are in open territory, tell us who and what you are.

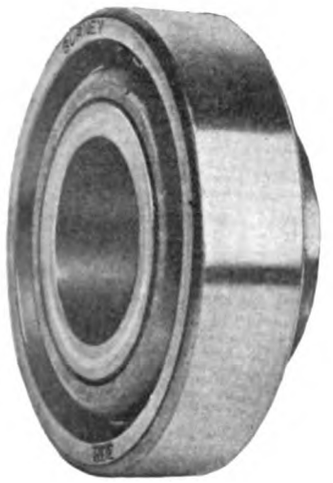
Empire Automobile Co., Indianapolis, U. S. A.

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CAPACITY

GURNEY

ENDURANCE

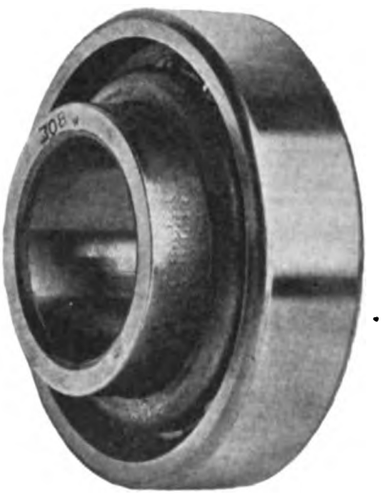


THIS BEARING, THE GURNEY RADIO-THRUST BEARING, is especially applicable in a number of places in a Motor Car. And in these places it has distinct advantage over any other bearing made.

¶ **In Front Wheels**—In addition to the simplicity, low friction, and general desirability of the annular ball bearing it has the one thing more desired, abundant capacity to take thrust.

¶ **On Rear Axles and in Rear Wheels**—In any of the various types in use, it has precisely the same advantages as in the Front Wheels, all the good features of the best annular ball bearing plus Thrust Capacity for any possible exigency.

¶ **Next to the Differential**—A single bearing serves with equal efficiency and success where ordinarily two bearings are used, a radial and a thrust bearing.



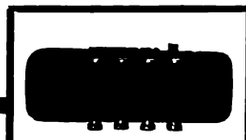
¶ **Back of the Bevel Pinion**—As next to the Differential you get in One Bearing all the service of two bearings, and at the Price of One.

¶ The Gurney R-T Bearing is the Ball Bearing plus. It gives you all the bearing value you have heretofore gotten, plus certain very desirable features you have always wanted. It gives you Gurney CAPACITY and ENDURANCE, plus Gurney SIMPLICITY and ECONOMY.

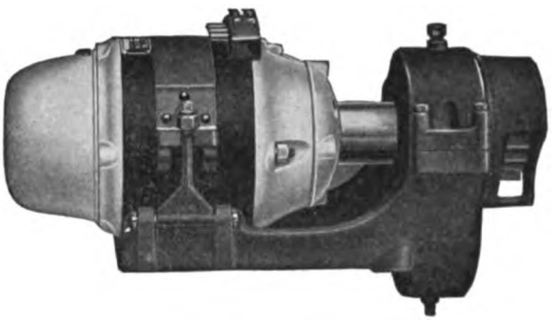
Gurney Ball Bearing Company

Jamestown, N. Y.

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The North East Lock Switch Positively locks the different circuits on or off as desired.



The North East Motor Generator—Note its compactness.



The North East Starting Switch Free from complicated contactors and contact troubles.

THE NOISELESS NORTH EAST

Electric Starting

AND

Lighting System

Positively the Lightest, Most Compact, Most Flexible, Most Powerful and Most Economical—the perfected result of over four years' experience in building electric starting and lighting systems in the finest and best equipped factory in the world devoted exclusively to the purpose.

HAS BEEN RUN 60,000 MILES WITHOUT ANY PRECEPTIBLE WEAR ON EITHER BRUSHES OR BEARINGS

Proving itself best by actual test, its simplicity has never yet been approached. The motor generator is constructed on the unit system with only one moving part — the armature — which automatically changes from motor to generator when the engine starts. It thus combines in a single machine the functions of two separate and distinct machines for starting and lighting. Its compactness requires only a comparatively small amount of space, which allows its installation on any engine in the most advantageous position.

The North East System does its work smoothly and noiselessly, and revolves the motor at exactly the critical speed to start the engine under any condition without pulling the voltage of the battery down to a point of exhaustion. Gives the same service on hilly tours as on the streets of the city.

Manufacturers who are serving the best interests of their car owners have realized the economy and efficiency of the North East Starting and Lighting System by adopting it, and investigation will prove it is the only system you'll want on your new car.

NORTH EAST ELECTRIC CO.

35 WHITNEY STREET

ROCHESTER, N. Y., U. S. A.

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Metal Products Axles—

Light in Weight, Silent, Unusually Rigid

THESE are the qualities that have given Metal Products Axles a fine record for long wear and satisfaction, on some of the best known and most popular motor cars.

Fine materials, expert workmanship and prompt deliveries are assured to buyers of Metal Products Axles. You can get either standard types or made-to-specifications axles.

Our pressed steel housing type rears are well-known and give exceptional satisfaction.

Our capacity for 1914 gives discriminating manufacturers the opportunity to contract for highest grade axles for either gas or electric pleasure cars.

Don't fail to talk over your proposition with us before placing your contract.

Metal Products Company

DETROIT, MICH.

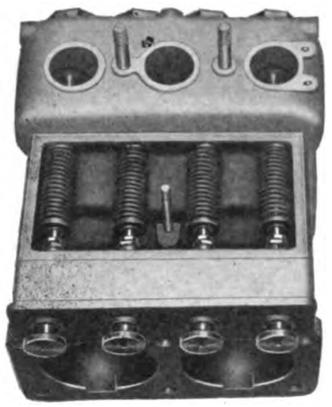
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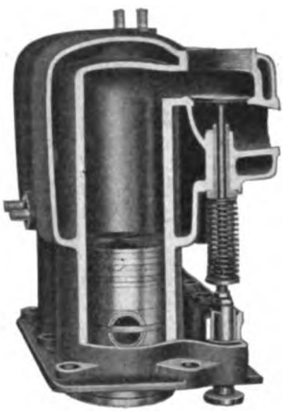


STANDARD SIZES

Model D, . . 3¾ x 4½
Model CX, . . 4 x 4½
Model D, . . 4⅜ x 6

A feature of Ergon design is the method of valve arrangement. Valve stems and push rods run in removable guides. Valves are extra large and the entire assembly is enclosed in an oil and dust proof compartment. They are, however, easily accessible by removing a door on each pair of cylinders.



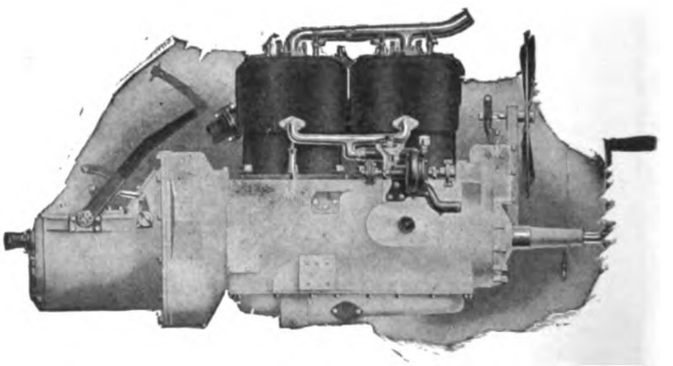


A large cooling water jacket is provided, the water intake at the bottom of the firing chamber and outlet near the top.

Both intake and exhaust manifolds are located on valve side of this motor, not so close together as to produce unusual heating but so as to aid carburetion. Magneto and water pump are located on opposite side.

Ergon cylinders are cast in pairs from special analysis non-shrinkable iron. The cylinders are bored twice and finished by grinding to a limit of .001 before being run in on the block.

In line with the general tendency toward starting devices, the Model D Motor Crank Case is deep enough so any standard make starter, electric or pneumatic, may be accommodated without disturbing motor accessibility. Timing gears have been replaced by Renold Silent Chain Drive.



We are prepared to make prompt shipment of any of the Ergon standard motors, either unit plant type or as independent motors.

Ergon Models C and CX in unit plant type are regularly equipped with multiple disc clutch in oil and selective type transmission. Model D in unit plant type has Brown-Lipe dry plate clutch.

HAZARD MOTOR MANUFACTURING COMPANY ROCHESTER NEW YORK

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SPRINGFIELD CONVERTIBLE BODIES

Dealers who anticipate the wants of hypercritical car buyers will be quick to see the advisability of specifying Springfield Convertible Bodies, for it stands that they make good cars still better and the quality argument they offer is too big to be discounted.

As specifications they offer a strong selling argument for both the manufacturer and dealer.

Beauty, convenience and sterling worth of these bodies is apparent to all who have seen them and studied their construction.

We show here an illustration which is a faithful picture of one of our products—made in a factory equipped to turn out bodies and tops of every style and size, from the smallest runabout to the most pretentious limousine or landaulet.

Send for complete details of construction.

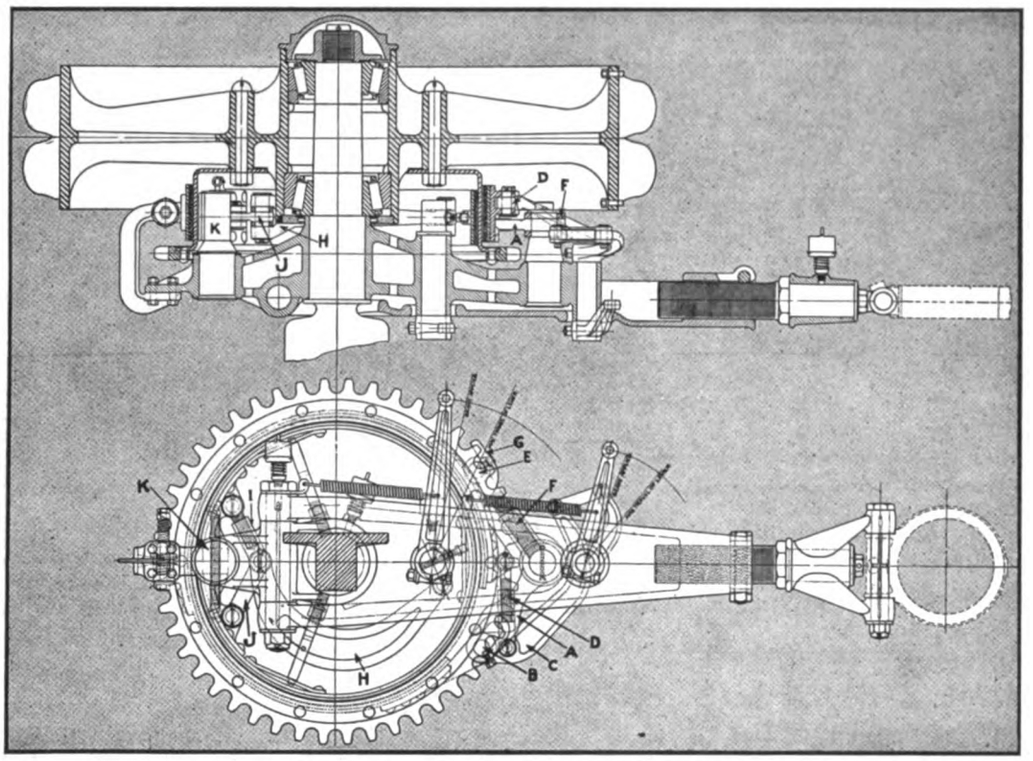
SPRINGFIELD METAL BODY CO.
Springfield, Massachusetts



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SHELDON BRAKES Are the Real Thing!

For Motor Trucks



They are double acting, of course—both service and emergency sets. But, unlike many double-acting brakes, they do **not** sacrifice the highly desirable **"wind up"** principle of action in order to work equally well in both directions.

Sheldon brakes "wind up"; but neither end of the band is rigidly anchored. When going ahead one end is anchored and the other is tightened. When going backward the **other** end anchors and the first end is tightened.

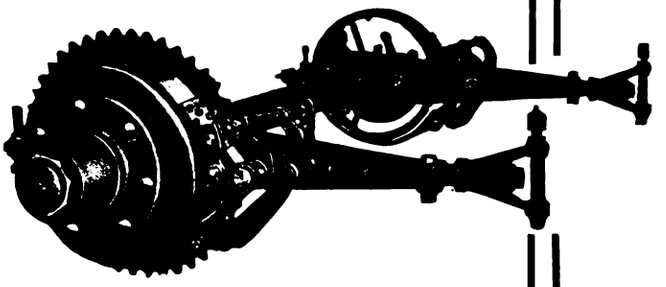
In the drawing A is the going-ahead anchor link, ending in a closed slot in which floats the pin B, attached to the outer brake band. The lever C, fulcrumed on B, and the adjustable tension link D tighten the brake. When going ahead the whole band moves till the pin B comes to the end of the slot as shown.

The cross pin E, in the end of the second anchor link F, engages the slot in piece G, riveted to the brake band. When the wheel is turning backward the band when tightened rotates till G stops against E thus anchoring the upper end of the band. This movement carries B to a free position in its slot in A, and causes the brake to wind up in the reverse direction.

The inside band simply floats in its drum. When the ends are spread by the toggle H I J, either end stops against the pin K, and the other spreads until the band grips all around its surface.

Incidentally, both sets of brakes act on the rear wheels—as they ought to! That is an accident policy worth having.

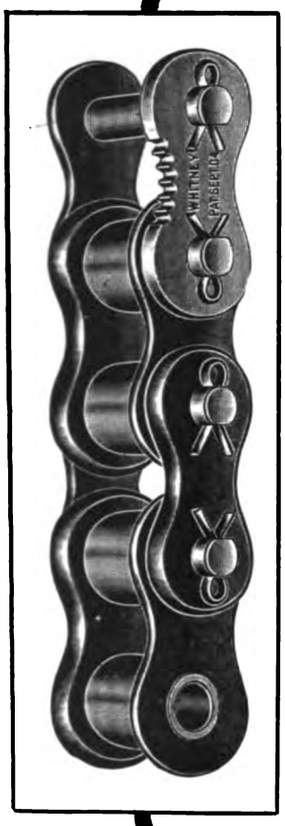
Let us tell you more about Sheldon axle, brake, and steel wheel equipment



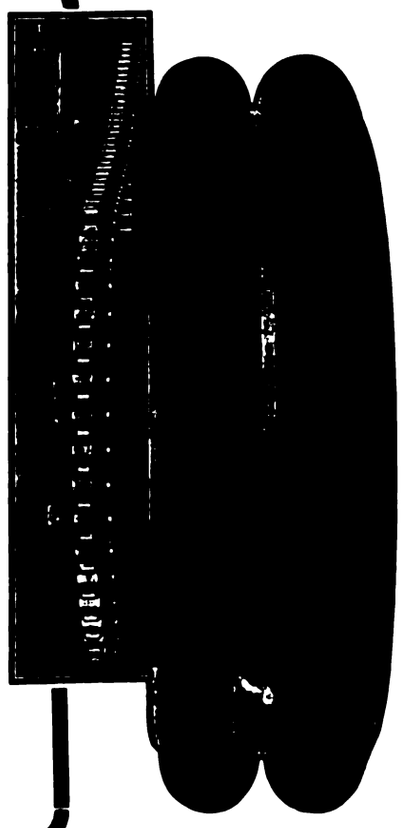
Sheldon Axle Company

WILKES-BARRE :: :: :: PA.

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"WHITNEY" Chains



WE call your attention here to "Whitney" Cotter Detachable Chains as the most practical chains ever offered for motor vehicles. They have made a record for themselves which no other Detachable Type has approached.

This Cotter Pin feature is so practical and necessary that it calls for little detailed explanation. The illustrations tell their own story, proving that this form of construction is logical and necessary for chain equipped motor vehicles. This Cotter Detachable Chain can be taken apart at any link and lengthened, shortened or repaired without the use of any special tool, as the Cotter Pin can be removed with pliers, screw driver or any sharp pointed instrument. The use of "Whitney" Cotter Detachable Chains assures the builder, owner and driver of commercial vehicles uninterrupted service on account of the ease of repair.

"Whitney" Chains are made from steel best adapted for the purpose, carefully hardened and calculated to resist the most wear, while in the matters of machining and assembling the utmost care is exercised and thorough inspections and tests characterize each process of manufacture. Their future service, however, depends upon the accuracy of sprockets, care, lubrication, alignment and adjustment, for the best chain in existence cannot withstand the evil influence of improper conditions and give best results.

Write for our illustrated catalog which shows top and side views of each size of all Roller chains manufactured by us.

"Whitney" Chains Are Built for Strains

The Whitney Manufacturing Co.

HARTFORD, CONN.

SPLITDORF

"Always There"

Neglect breeds mischief

and every day you neglect insisting upon the use of SPLITDORF COMMON SENSE PLUGS you are opening the way for mischief in your ignition system and your motor.

We make no mistake in claiming absolute superiority for SPLITDORF PLUGS for they are soot-proof, gas-proof and unbreakable and we GUARANTEE OUR CLAIMS.

The insulation of SPLITDORF PLUGS is high quality mica and designed and manufactured to absolutely withstand the breaking down effects of high tension current.

The design of the SPLITDORF central electrode is proof against all expansion and contraction.

The construction of the SPLITDORF shell allows small space for gas and its shape prevents all trouble due to pre-ignition on account of red-hot metal parts.



The SPLITDORF PLUG is less liable to short-circuit from carbon deposits than any other form of plug ever put out by any manufacturer.

Neglect no longer—insist upon SPLITDORF PLUGS with the hexagonal porcelains, and eliminate all chance of future mischief.

Remember, All! "New ignition for old" is our slogan--We have a SPECIAL EXCHANGE proposition of the greatest interest to every owner of a gasoline motor who would save time and money. Write or call TODAY for particulars.

SPLITDORF ELECTRICAL COMPANY

ATLANTA, 8 Harris St.
BOSTON, 180-182 Massachusetts Ave.
CHICAGO, 64-72 E. 14th St.
DETROIT, 972 Woodward Ave.
KANSAS CITY, 1823 Grand Ave.
LOS ANGELES, 1226 S. Olive St.
NEWARK, 290 Halsey St.
NEW YORK, 18-20 West 63rd St.
PHILADELPHIA, 210-212 N. 13th St.
SAN FRANCISCO, 1028 Geary St.
SEATTLE, 1628 Broadway

FACTORY: Newark, N. J.

LONDON, BUENOS AIRES

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Your Customers Want Soot-Proof Spark Plugs

There is a greater and steadier demand for Soot-Proof Plugs than for any other.

They have been on the market longer and motorists have come to rely upon them when others failed to live up to their advertised qualities.

Soot-Proof Plugs are warranted not to short-circuit or leak. They are built with a double chamber and have three times the resistance of the ordinary plug—hence the hottest spark a current is capable of.

Soot-Proof Plugs are self-cleaning and prevent all ignition troubles such as balks, weak spark, carbon, etc., in so far as plugs are concerned.

Why not sell the best known and most reliable spark plug. Going with popular demand is better than bucking against it.

C. A. MEZGER, Inc.

15 Canal Place
New York

Philadelphia, 1427-33 Vine St., Petry-Cassidy, Inc.
Chicago, 1430 Michigan Boulevard, F. E. Sparks.
Detroit, Ford Building, H. E. Butcher.
Portland, 329 Ankeny St., Hughson & Merton.
Seattle, 924 E. Pike St., Hughson & Merton.
San Francisco, 530 Golden Gate Ave., Hughson & Merton.
Los Angeles, 1229 South Olive St., Hughson & Merton.



Get Weed Tire Chains at Once!

"I know you are a careful driver, but it is best to adopt every device to ***prevent*** accidents.

"I can't afford to take ***any chances.*** We have all foolishly depended on rubber alone long enough. It's time to awake to our responsibility. So go at once and buy a complete equipment of ***Weed Chains*** and never start out without them when the roads or pavements are slippery or greasy."

Weed Anti-Skid Chains

Insure Against Anxious Moments



Probably no other device has done so much to raise the factor of automobile safety as WEED CHAINS. They are the proverbial "ounce of prevention" against skidding, the cause of over ninety per cent of all automobile accidents—***Life Insurance*** and ***Accident Insurance Companies*** strongly endorse them and recommend their use. ***Taxicab Companies,*** for their own protection, ***insist*** that their drivers put them on when the streets are wet or slippery.

Increasing Demand

for WEED CHAINS makes them the ***most profitable*** Automobile Accessory handled by Dealers—Quick and Steady Sales—No Dull Seasons—No Dead Stock—Easily Handled—Liberal Profits—Universal Satisfaction.

Attractive, convincing, decorative, lithographed hangers supplied to dealers upon request.

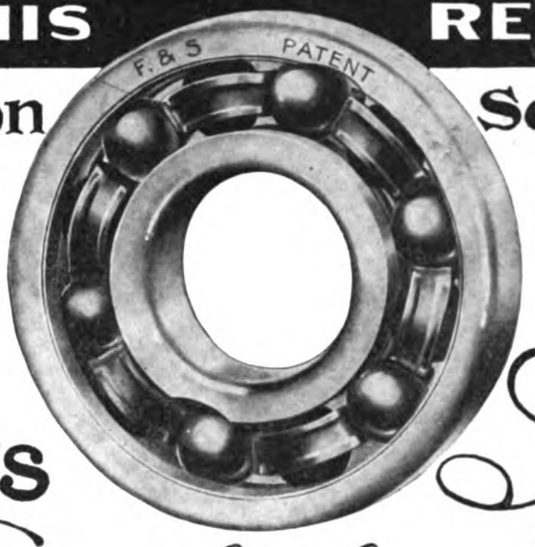
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Weed Chain Tire Grip Co.
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Manufactured in Canada by
Dominion Chain Co., Limited
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Friction—Minimum!
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Used only on

F & S Ball Bearings

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Mr. Manufacturer: The Surest Way to "Profit by Your Mistakes" Is Not to Make Them!

The biggest single *opportunity* for the car manufacturer to make a mistake is *passed in safety* when he decides on the

You can buy better and cheaper from a SPECIALIST than from your own "Motor Department"

"sweet tempered"

BUDA MOTOR

"The Part That Sells the Car"

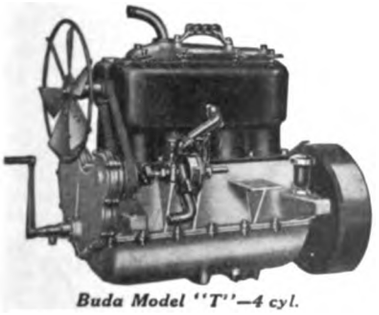
1914 Specifications:

Model "SS"—6 Cylinder Motor 3¾x5½
Model "T"—4 Cylinder Motor 4¼x5½
Model "O"—4 Cylinder Motor 4½x5½
Model "Q"—4 Cylinder Motor 3¾x5½
Model "M"—4 Cylinder Motor 3¾x4½

Model "SS" furnished either as separate Motor or with Bell Housing Crank Case.

Models "T," "O" and "Q" furnished either as separate Motors or with Bell Housing Crank Cases. Also either for sub-frame or main frame support.

Model "M" furnished in separate type only for sub-frame support.

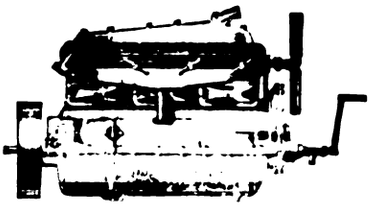


Buda Model "T"—4 cyl.

One reason *why* "it sells the car" is that car buyers have become aware of the unequalled worth of the BUDA Motor and (you know it's a fact)

When The CONSUMER Knows What He Wants,—"arguments are not in order."

His educated preference is a mighty force in your favor and to have him on your side, you must give him *what he wants.*



Model "SS" Buda "Little Six"

THE BUDA COMPANY

FACTORY, HARVEY, ILL. (Chicago Suburb)

Address all correspondence to our **FACTORY REPRESENTATIVES**

BRANDENBURG AND COMPANY

1108 SOUTH MICHIGAN AVENUE, CHICAGO — FORD BUILDING, DETROIT — 57TH AND BROADWAY, NEW YORK CITY

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One or two good concerns who want the better class of workmanship

will find on investigation that KONIGSLOW gives a brand new idea of value and service on CLUTCHES and the things that go with them.

If everybody realized that the CLUTCH is the ***point of contact with the driver***—the place in the car where he feels things—KONIGSLOW simply couldn't supply the demand.

As it is, there are some few good responsible concerns who know this. They want a CLUTCH that reminds the driver he is driving a mighty good car. To such manufacturers our products will appeal. We promise the right workmanship and the right service.

Don't wait until you are ready to place orders—write us today. Remember KONIGSLOW'S CLUTCHES talk for you more than they do for KONIGSLOW.

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Clutches
Rocker Shafts
Control Levers
Universal
Joints
See

KONIGSLOW CLEVELAND

The Otto Konigslow Mfg. Co., Cleveland

DETROIT OFFICE: J. H. Gould, 1202 Majestic Bldg.

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by keeping abreast of the rapid development of the "two-wheeler."

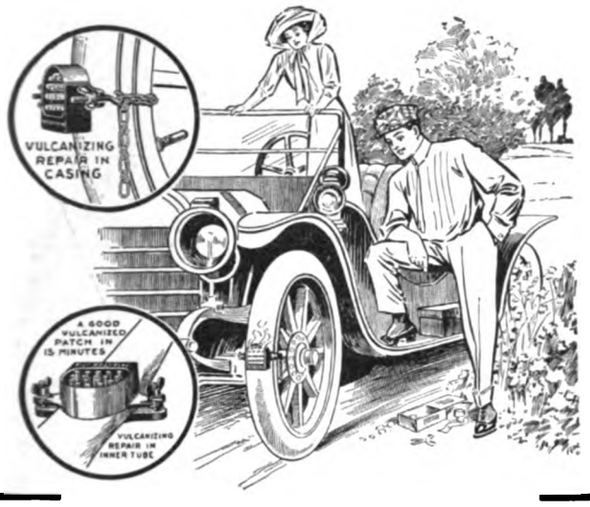
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THE Trade is hereby notified that the United States Patent Office has finally rendered judgment in favor of the Adamson Manufacturing Company, of East Palestine, Ohio, and on April 1st, 1913, granted to them Letters Patent No. 1,057,911, covering in broadest terms all types of casing and tube vulcanizers involving the principle of the Adamson Vulcanizers now on the market

You are hereby warned that we will vigorously enforce our exclusive right to this type of vulcanizer by prompt action in the Federal Courts, and you are hereby warned against selling or offering for sale any infringing device.

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Manufacturers of Automobile Accessories and Specialties

EAST PALESTINE, OHIO

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YOU can take a *thousand miles of service* out of a set of tires by driving them insufficiently inflated over *ten miles of road.*

The New Positive Lock Stop Twitchell Air Gauge

Insures you against premature wearing out of tires.

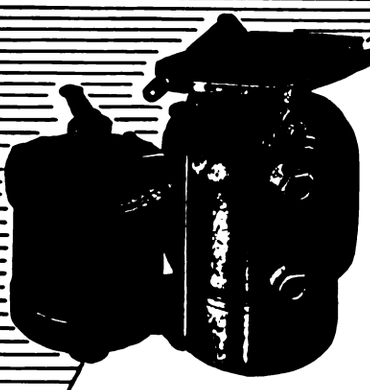
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83.5 Miles on a single gallon of fuel

All mileage records were broken on June 21st 1913 by a Franklin Car equipped with a

Newcomb Carbureter

you are doubtless familiar with this test. For full particulars of the test see official report of the Automobile Club of America, under whose auspices the test was made. Why not get familiar with the carbureter that meters out and atomizes the scientifically correct amount of fuel for every driving condition.

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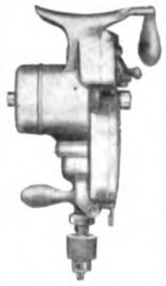
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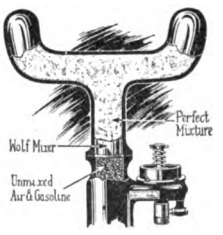
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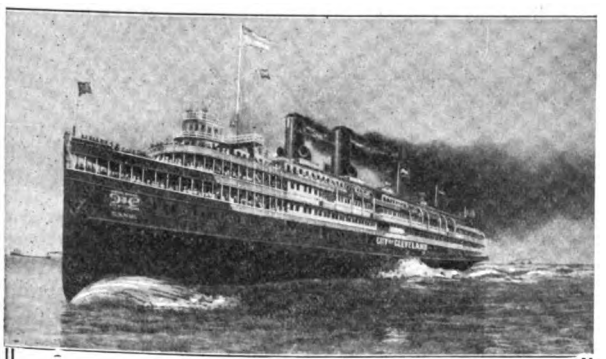
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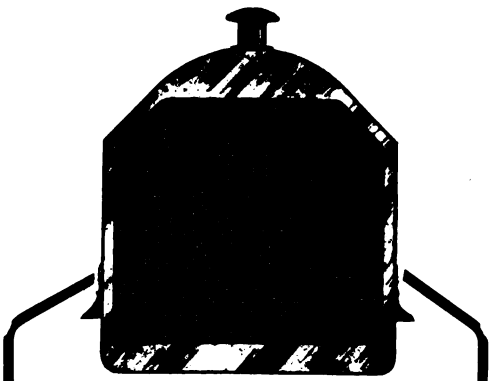
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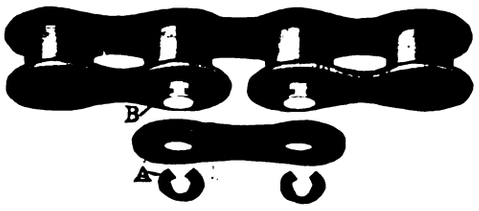
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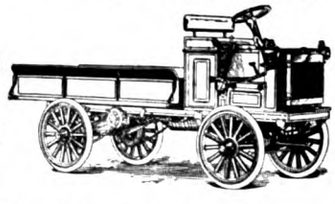
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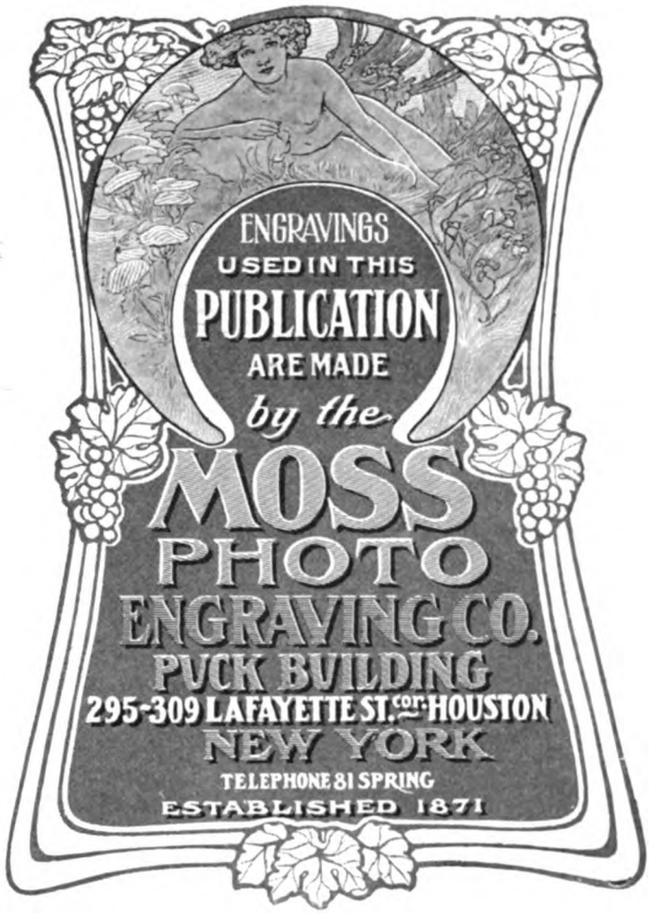
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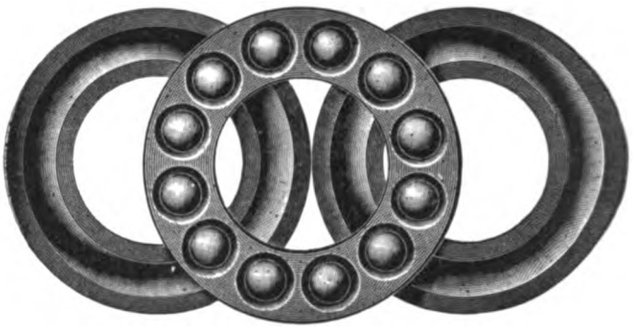
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STARTS—LIGHTS—IGNITES
SILENT—SIMPLIFIED—STURDY

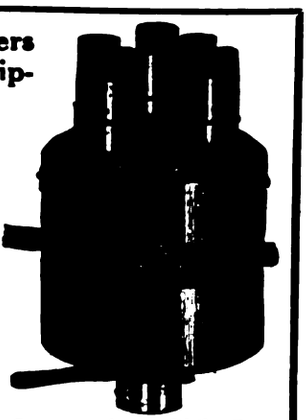
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The Atwater Kent Ignition System



More than 100,000 users of the Atwater Kent System will testify that it has increased the speed, flexibility and hill-climbing ability of their motors and developed a smoothness of running which was a revelation to them.

It will do the same for your customers.

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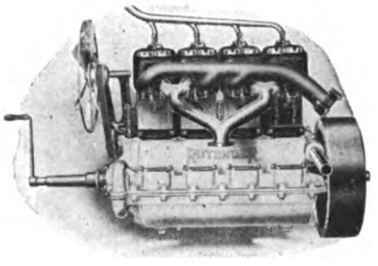
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Raceabout



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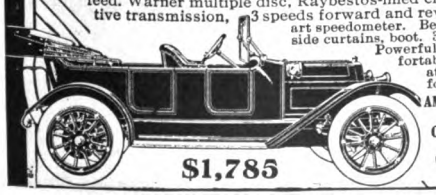
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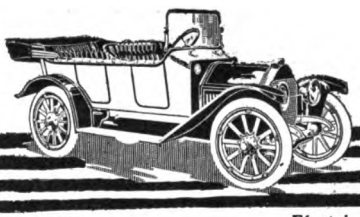
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With Electric Self-Starter. An Electric Starter of proved efficiency is one of the features of the Ames "45"—a car with every essential refinement contributing to comfort, yet priced at $1,785. Without Starter, electric lighted, $1,635. Made with well-known "Amesbilt" body. 5-passenger, motor-driven electric lights. Perfect cooling system. Force-feed pump. Schebler Carburetor, new Remy dual system high tension magneto, oil-driven pumps. Sight-feed. Warner multiple disc, Raybestos-lined clutch. Selective transmission, 3 speeds forward and reverse. Stewart speedometer. Best mohair top, side curtains, boot. 36x4-inch Tires Powerful, speedy—comfortable—unequalled at price. Write for catalog.



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$1,785



Model 5-A $1700
Touring Car Fully Equipped

Electric Cranking and Lighting

People who demand POWER, ENDURANCE, LUXURY and SAFETY in a motor car, drive the time-tested GEARLESS TRANSMISSION CARTERCAR. Presented in four excellent models $1600 to $2000.

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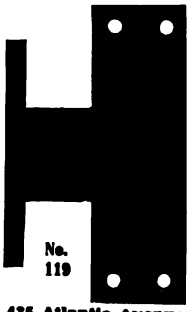
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You can put a Hercules Auto Lock on the car of every one of your customers and guarantee them against theft, and also pocket an attractive profit into the bargain.

The Hercules automatically locks the transmission lever in neutral.

Guaranteed thief-proof and easily attached to any car.

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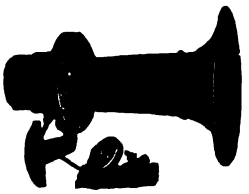
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STRENGTH COMFORT BEAUTY ECONOMY
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United States Tires
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They cut down tire bills

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Long Stroke Motor, Big Roomy English Body Center Control, Left Hand Drive, Every Necessary Accessory—and a Wonderful Economy Record

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Our agency will be a big money maker for 1914

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Simplicity, Strength, Durability

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You would not think of putting an inferior motor in your car, would you? Superior transmissions are as essential as the best motors.

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Automobile Tires



If the rubber composition in Kelly-Springfield Tires wasn't the result of seventeen years' experience, and if each individual tire wasn't strictly hand made, then the Kelly-Springfield mileage average would be luck. As it is, however, it's something else.

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Branch offices in New York, Chicago, Philadelphia, Boston, St. Louis, Detroit, Cincinnati, San Francisco, Los Angeles, Cleveland, Baltimore, Seattle, Atlanta, Akron, O., Buffalo.
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The new KisselKar 48 "Six" at $2350, with the big 60 "Six" at $3150, give the KisselKar real leadership in the "Six" field. Strikingly handsome cars of unusual comfort. Extra liberal wheelbase—roomy tonneaus—powerful, flexible motor—big wheels and tires. Fully equipped—electric lighted and started—left hand drive, center control. The KisselKar 40 "Four" at $1850 is the leading value in its class.



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The only demountable rims that positively prevent tire wobbling. No special tools needed for operation. No unnecessary loose parts. Detaching feature independent of demounting mechanism. Will accept either straight side or clincher tires. Used as standard equipment on America's finest cars.

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Our new and improved manufacturing facilities insure quality products and prompt deliveries in large or small quantities.

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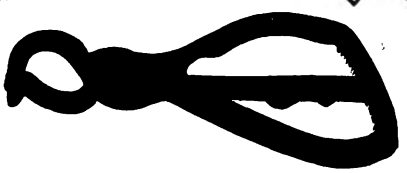
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Standard, Length 10¾ in.,	Flare 5¼ in.	$15
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Interlocks are complete inner tires—not inner shoes—placed between the outer casing and inner tube to strengthen the casing and protect the tube from punctures. They insure safety—make new tires give twice the usual mileage, and add 1000 to 5000 miles to old ones. Don't affect resiliency. Make your tires blow-out proof.

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Faultless Lighting
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ACT INSTANTLY
Whether car goes backward or forward

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We specialize on gears. Are already producing them for over 25 well known manufacturers. With increased facilities we can now contract to deliver you guaranteed gears, in any quantity—just as wanted.

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Packed in box like ball bearings

Red Head REGISTERED U.S. PAT. OFFICE

Magneto Plugs coax maximum power out of engine.

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Specialists in **Spring Suspension** High Grade Only

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Whether for Motorcar, Motorboat, Motorcycle or Aeroplane, the Champion Spark Plug is your best buy. At dealers everywhere.

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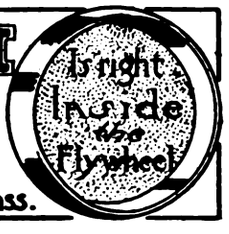
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TIRENEW

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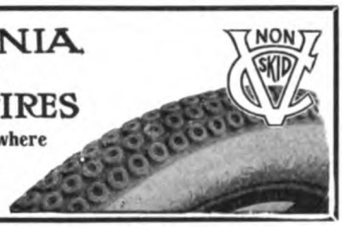
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PENNSYLVANIA Oilproof VACUUM CUP TIRES

Making Their Mark Everywhere

Pennsylvania Rubber Company
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MOTZ Cushion Tires

For Pleasure Cars and Light Delivery Cars

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A—Shows *double*, notched treads.
B—Shows undercut sides.
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D—Shows absorbing means when passing over an obstruction.

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really fool-proof—absolutely automatic—only one moving part.

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Schafer Ball Bearings

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Special features that eliminate speedometer troubles. Send for the booklet.

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The "gearless car"—no clutch to slip, no gears to strip—completely equipped, fully guaranteed. 4-cylinder, 22½ H.P. water-cooled motor, Bosch magneto, artillery wheels, best quality clincher tires. Makes 5 to 50 miles per hour, 28 to 32 miles on 1 gallon of gasoline. Great hill climber. You can secure EXCLUSIVE SALE in your territory. Write for Book "B."

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AMERICAN KUSHION KORE

A tire filler 10 to 20 per cent. lighter than any other tire filler. A big proposition for dealers who are on the alert for more and better business. Write for details.

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NATIONAL Mixer and Primer

Makes any car start easier in cold weather; adds 10 to 40% to power and mileage. Simple, easily installed, guaranteed effective on any motor. Get details and price.

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Here is an accessory that will not stay on the shelf. It sells on sight.

MARVEL STEAM VULCANIZER

Automatic, therefore safe for rubber. Uses alcohol or gasoline. Low priced. Send for sales plan and sample Vulcanizer.

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REPAIR tires by the approved method that tire makers have adopted for MAKING them. Instead of cutting away a lot of fabric and rubber from the OUTSIDE of the tire, reinforce it from the INSIDE with a few layers of canvas, seal the hole through the tire with a plug of raw rubber, and apply heat to the inside and outside at the same time. Thus you can make a repair that is actually stronger than the rest of the tire—one that can't give way.

This method is economical, requiring only about half as much material as any other system. It is simple—anyone can do the work perfectly. Only one set of forms is required for handling all sizes of tires. By curing from both sides of the tire at once the time of curing is decreased 50 per cent. and all tendency toward overcuring the tire is eliminated.

SHALER

Steam and Electric

VULCANIZERS

Wrapped tread repairing can be done best only with Shaler Vulcanizers because they have the exclusive feature of a temperature control that is automatic. This insures the maintenance of a uniform temperature from beginning to end of the cure and does away with constant watching by the operator. He can devote ALL of his time to preparing repairs while the vulcanizer is at work.

Write today for details of this moneymaking process

We have published a book of especial interest to garage men. In addition to other valuable information it contains description of Shaler tire repair outfits. Write for free copy of "Common Sense About Tire Repairs."

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$4000 will buy automobile business doing $235 weekly. Large profits. Assured business. Sale price less than 50% of actual value. Excellent opportunity for right party. Principals only apply. Box 5866, North Philadelphia Station, Philadelphia, Pa.

FOR SALE—Alco six-cylinder, 60 H.P., 1913 7-passenger touring car, Firestone non-skid tires; car never used; bought to exhibit at an agency. P. C. FULLER, Grand Rapids, Mich.

AUTOMOBILE Transmission Gears for sale, suitable for Briggs-Detroiter cars. Address GEORGE N. COMLY, Syracuse, N. Y.

SALESMAN WANTED — Experienced electric automobile salesman. Give experience, salary expected and references. Box 261, care of Motor World.

WANTED—Salesmen to demonstrate new patent article; good salary. SIMPLEX VULCANIZER CO., Omaha, Neb.

THE Boston starter for Ford automobiles, starts from the dash, practical and cheap. $25.00 installed. J. VERNER ANDERSON, 715 Conn. Mutual Bldg., Hartford, Conn.

I MADE an old leather top, whose finish was dead, better than new leather. It was soft and the finish lasted, by using PEERLESS LEATHER TOP DRESSING for black leather only. THE COLUMBUS VARNISH CO., Columbus, Ohio.

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Owners or dealers; any state, county, city; weekly and monthly supplements at lowest prices. Special lists of Electrics, Trucks, Fords, Studebaker, Overland, etc.
MOTOR LIST CO. OF AMERICA,
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GOOD garage and harness shop in best part of Nebraska for sale; no other garage or shop here; buildling 30 by 60 ft.; brick. Address P. J. ROBINSON, Prosser, Neb.

80 ACRES of land in Texas that cost me $1,600.00 to exchange for auto. P. O. Box 566, Atlanta, Ga.

FOR SALE—A Winton 5-pass., newly overhauled; good touring or make splendid truck; cheap for cash. D. V. TUCKER, Shiloh, O.

BROKEN CRANKSHAFTS, cylinders, crankcases, flywheels, gear teeth, pistons, perfectly welded and machined ready to replace. Guaranteed and references. Machinery up to 5 tons welded. ATLAS WELDING WORKS, 74-76-78 Irving St., Rahway, N. J.

COMPLETE list New York State registration, 50 cents per thousand names. OWNERS, AUTO LIST CO., Albany, N. Y.

THE inside of my automobile top was faded, water and grease stained, and looked bad until I used PEERLESS LINING DYE. Then I had a black lining that was soft and pliable. THE COLUMBUS VARNISH CO., Columbus, Ohio.

WANTED—Four-cylinder 40 H.P. light weight motor minus magneto and carburetter and suitable for speed boat. Address, giving rock bottom price. MACK, care Motor World.

PARTNER WANTED with some money to open automobile repair business in splendid automobile town of thirty thousand; excellent opportunity to make some money. I am good mechanic with twelve years' automobile experience. Address D. G. BOWMAN, Tulsa, Okla.

AUTOMOBILE CYLINDERS reground, new pistons and rings fitted. Garage air compressors. CAST IRON BRAZING CO., Manchester, N. H.

ECONOMY Underground Storage Tanks Pumps, capacity one to six barrels. Top quality, bottom price. ECONOMY GAS MACHINE CO., Manufacturers, Rochester, N. Y.



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A market place where Dealers, Jobbers and Manufacturers may buy, sell or trade used cars, parts and appliances and where help or situations may be secured at a nominal cost.

AUTOMOBILES AND PARTS—Largest stock ever known. Prices on anything. PROGRESS BROKERAGE CO., 527 Grant St., Buffalo, N. Y.

A PRESERVER of mohair automobile tops. Puts new body, color and life into worn out mohair. Makes old mohair look like new. PEERLESS AUTO TOP DRESSING also waterproofs leaking tops. THE COLUMBUS VARNISH CO., Columbus, Ohio.

FOR SALE—Automobile; Chalmers forty roadster, with double rumble seat; just overhauled and repainted; good condition. 1148 Pierce Building; 'phone Olive 1622; St. Louis, Mo.

1913 Lozier seven-passenger Big Six, with self-starter and full equipment. Car is practically brand new and has new tires all around. Price $3,600. ARCHAMBAULT MOTOR SALES COMPANY, 197 Ogden Ave., Milwaukee, Wis.

FOR SALE—Garage. Opportunity for two live young men with $15,000 capital. $600 net profit monthly guaranteed. For particulars, STEVENS, 1337 Clinton Ave., New York.

ARE YOU in need of any additional help in any department of your business? Are you out of employment or looking for a better connection? Have you second-hand apparatus of any kind or do you want to buy second-hand material? Have you a factory site for sale or do you want to buy one? If so, use the Want and For Sale column of the Motor World. Seven words to the line, fifteen cents a line. Advertisements can be inserted over a number when it is desired and identity of the advertiser will be kept confidential.

SACRIFICE SALE—62nd St., near Ave. N, Brooklyn, N. Y. — $4,250. — Eight model one-family homes, taken under foreclosure, building on plots 27 x 100; containing 8 rooms, tile bath, hardwood trim, steam heat, electric lights, parquet floors; richly decorated, with laundry in cellar; built to sell at $5,500; are offered at $4,250, being less than cost of construction, on easy terms. Will take automobile as part payment. To reach property take Culver line to Ave. N station. L. W. PEASE, 2370 62nd St.; 'phone 7226 Main.

KEROSENE FOR AUTOMOBILES.
New Model B uses successfully half and half mixture lowest grades kerosene and gasolene. Satisfaction guaranteed or money refunded. Greatly increased power, very slow speed on high. Starts easy at zero. Special agents' prices. Dept. MW, THE AIR-FRICTION CARBURETOR CO., Dayton, Ohio.

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For leather seats and cushions. Dries hard on clean leather. The color does not come off. Renews the finish. Ask your dealer.
THE COLUMBUS VARNISH CO.,
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RE-GROUND.
We carry a complete stock of re-ground bearings for immediate exchange. 'Phone Col. 5889.
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"The Oldest Concern in the Business,"
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BARGAINS, BARGAINS, BARGAINS
One Studebaker electric, 1911, new exide batteries, a genuine bargain at $350.00. One Lambert roadster, four cyl., 30 H.P., tires and car in good running order, $250.00. Cars are worth several times the price but need cash and will sacrifice. AMERICAN AUTO SALES CO., Oshkosh, Wis. Dept. W.

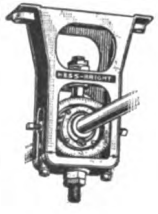
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BALL ~ BEARINGS

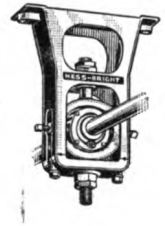
HB DWF



The Hess-Bright Manufacturing Company

Pioneers in the introduction of Annular Ball Bearings

Most extensive resources and plants in existence devoted exclusively to ball bearing manufacture. Enlarging and improving facilities, product and capacity for distribution.



Main Offices and Plant No. 2 on line of Penna. R. R. to New York

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Stores for Retail Distribution:

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Why the Church-Field Electric has been Klaxonized

"IT has been customary for manufacturers of electric carriages, for a number of years, to use electric bells as warning signals.

"In view of the fact that the Church-Field Electric is designed and manufactured along automobile lines, in distinction from carriage lines, and is in all respects an electric automobile, this company has from the beginning used Klaxonet horns as its standard equipment for warning signals.

"The Klaxonet was selected because of its high standard and fine tone, and the economy of current consumption. There is an advertising value to the Church-Field Electric by reason of the use of Klaxonet Horns."

—Excerpt from a letter from the Church-Field Motor Company to the Makers of the Klaxon.

The inadequate bell is as out-of-date for electrics as is the bulb horn for gasolene cars. 6 of the former, 51 of the latter, are now Klaxon-equipped. This list includes, with but one or two exceptions, every high-grade car on the market.



KLAXONET

Lovell-McConnell Mfg Company Newark, N.J., U.S.A.

KLAXON

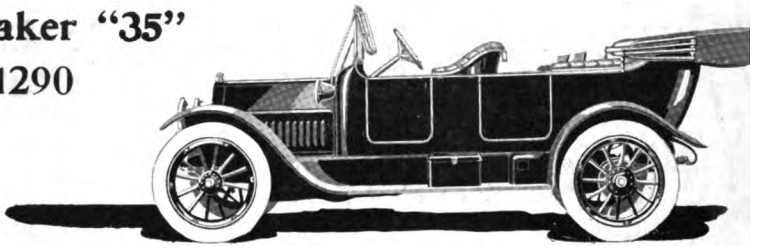
"The Public Safety Signal"



KLAXON

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Studebaker "35"
$1290



THE demand for Studebaker Cars is universal. But the explanation is simple.

In the first place no bigger values can be found.

In the second place the public has confidence in Studebaker integrity.

—And that is why Studebaker dealers enjoy the popular favor that comes from handling a standard line of known value.

Contracts to sell Studebaker cars are eagerly sought and always will be sought—so long as the public endorses Studebaker cars, Studebaker service and Studebaker integrity.

THREE CARS

$885 Studebaker "25" $1290 Studebaker "35"
$1550 Studebaker "SIX"

Completely equipped f. o. b. Detroit

STUDEBAKER DETROIT, MICH.

Studebaker

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MOTOR WORLD

A Trade Paper Giving the World's Motor News

Vol. XXXVI
No. 6

New York, July 31, 1913

Ten cents a copy
Two dollars a year

"COMPLICATED STARTERS WON'T DO"

That's what automobile **owners** and automobile **dealers** are saying.

They agree that the Electric Starter has come to stay, but all will be careful to avoid **complicated** starters that puzzle the brain of any garage man that attempts an overhauling.

Thus comes the **increased** popularity of the **Electric** Disco, which is **NOT** a complicated starter.

Motor car makers are paying more for this starter than for any other, **to avoid mechanical complication. They want their cars to be trouble-proof** as well as efficient.

You, Mr. Motorist, should heed these facts. Then you'll get the benefit of a **simplified** electric starter.

Spinning or Cranking?

In comparing Electric Starters, the experienced motorist also notes the **speed** at which the motor revolves.

The difference is very noticeable.

The average electric starter gives a speed of 40 to 50 revolutions per minute. It cranks, but does not **spin** the motor.

The **Electric Disco,** at the touch of the button, spins the engine 150 revolutions per minute.

Think what this additional speed means on a cold day when the engine is dead and the oil stiff.

It means not only a **sure** start but an **instantaneous** start.

Leading 1914 Cars Carry Disco Equipment

More automobile manufacturers are being added right along to the list of Disco users. And the greatest engineers in the country concede that the **Electric Disco** is built of the best materials and in the most expert manner. That's because we are not jobbers. We make our own parts, thus attaining a precision otherwise impossible.

Before You Buy

your car, look into this starter subject carefully. Sooner or later you must know starters. And the time to know is **before,** not **after** your car is delivered. **FOR YOU CAN'T CHANGE STARTERS. THE STARTER is built into** the car.

Send for the Electric Disco Book. We have equipped over 150,000 cars. Surely our experience should be worth something to you. A postal sent today brings answer by return mail.

THE DISCO COMPANY

715 Dodge Building **DETROIT, U. S. A.**

The ELECTRIC DISCO System

STARTING—LIGHTING

Published Weekly by the Motor World Publishing Company, 1600 Broadway, New York

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Truffault-Hartford Shock Absorbers Help Sell Stevens-Duryea Cars

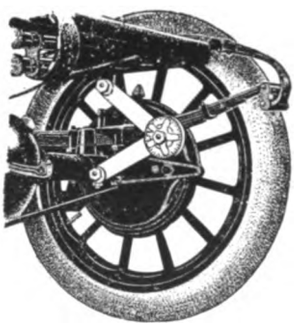
Progress in automobile manufacture dates back to the creation of the first power-driven wagon by Mr. Frank Duryea and is traced up through its several stages to the splendid six-cylinder Stevens-Duryea car of today.

The Stevens-Duryea occupies a unique position in the automobile world not only as the pioneer car, but as one to advance many new and revolutionary departures in construction—later to be universally adopted by leading car concerns.

One of the factors to which may be attributed the fast-increasing demand for the Stevens-Duryea car is the exceptional provision its builders have made for the comfort and easy-riding of its passengers.

With deep upholstery, newly designed springs and finally Truffault-Hartford Shock Absorbers, this car rides with remarkable smoothness.

Truffault-Hartford Shock Absorbers virtually complete its comfort equipment—bringing out the best in each of the other factors.



Send for New Complete Catalog

Comfort has become a vital consideration to which car buyers are no longer indifferent. The provision made by car concerns in the equipment of their cars is one feature that never escapes the car buyer today.

In his estimation there is an emphatic need for Truffault-Hartford Shock Absorbers—due not alone to his knowledge of the adoption of this device as regular equipment by 25 leading car builders, but in nine cases out of ten to his actual and satisfactory experience with Truffault-Hartfords on cars he formerly owned. The

Truffault-Hartford
SHOCK ABSORBER
"The Pioneer Shock Absorber"

is of highly material assistance in selling any car. Manufacturers have this assurance and the extra assurance that their car's appearance will not suffer by attachment. There is an expressed preference for Truffault-Hartfords among women motorists—and as occupants of the rear seat and tonneau *they ought to know.*

Insist Upon Truffault-Hartfords on Your New Car

HARTFORD SUSPENSION CO.

EDWARD V. HARTFORD, Pres. **Office and Works: 142 Bay St., Jersey City, N. J.**

Manufacturers of Hartford Electric Starting and Lighting System

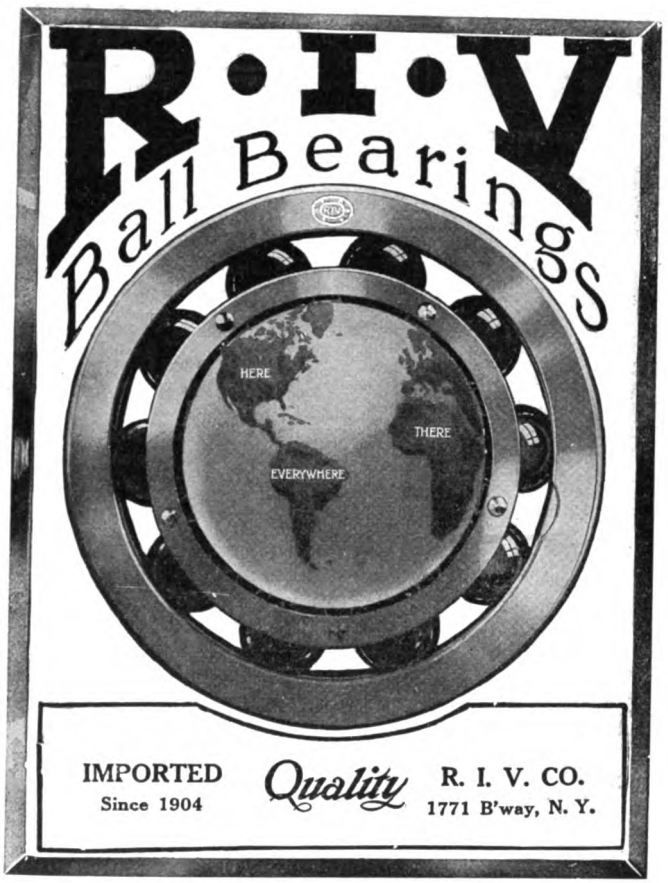
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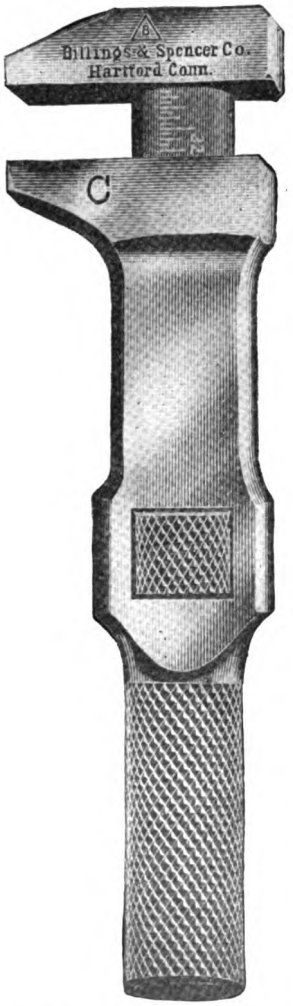
The high quality maintained in R. I. V. bearings has made them the Standard of Excellence. More efficient and more durable bearings are not built.

Look into your cars. If you find R. I. V. Bearings (as you are likely to do in the best of cars), vou mav know that the maker uses the best where it cannot be seen as well as where it is in full view.

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Billings & Spencer Tools

"The Tools That Are Guaranteed"



B & S Wrenches represent the maximum of tool efficiency. Drop-forged from best Bar Steel, perfectly constructed, perfectly finished.

Write for Catalog

The Billings & Spencer Co.
HARTFORD, CONN.

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A Note of Warning

To those who substitute other oils for

MONOGRAM OIL

¶ From now on it will be our policy to legally prosecute all those who persist in this unfair practice.

¶ Our attorneys are now starting suit against two concerns who have sold other oils for ours.

¶ Be sure and secure MONOGRAM OIL in sealed cans.

¶ We are going to protect those who ask for MONOGRAM as well as protecting our own interests.

¶ Insist — Demand the MONOGRAM Brand.

NEW YORK LUBRICATING OIL CO.
Consolidated with
Columbia Lubricants Co. of N. Y.
116 Broad Street, New York City

BRANCHES AT NEWARK, BOSTON, CHICAGO, CLEVELAND, PHILADELPHIA, SEATTLE, SAN FRANCISCO, LOS ANGELES, SPOKANE, LONDON, ENGLAND; JOHANNESBURG, SO. AFRICA

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For progressives only

AS a rule, an automobile dealer's success or failure is equivalent to the success or failure of the factory he is doing business with.

The success of the Willys-Overland Company has been due, largely, to its foresight and ability to correctly judge and weigh the average public demand. Definite knowledge of this has made it possible for us to always keep it over-supplied. That is, knowing public opinion and operating along the lines of least resistance, we have continually given the public considerably more than they expected.

The result is that today we are recognized as the leading and most influential factor in the industry.

Every Overland dealer shares in the prestige and profits that naturally come from such industrial distinction. Thousands of dealers have prospered with us. Thousands of Overland dealers are recognized by their local banks as among the soundest business institutions in their community. Thousands of Overland dealers have constructed a profitable business which would have been impossible without such a sought-after car and comprehensive organization as ours back of them.

Think this over. We are continually on the lookout for new and better dealers. Possibly we can get together to our mutual advantage.

Our 1914 line will be the strongest in the history of our company. And 1914 would be a splendid time for you to start.

We announce August 16th. Wait for this and then get into communication with us.

The Willys-Overland Company

Toledo, Ohio

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MOTOR WORLD

Vol. XXXVI New York, U. S. A., Thursday, July 31, 1913 No. 6

BRITISH COMMER TO HANDLE ITS AMERICAN INTERESTS

Lapse of Old Contracts Enables Truck Maker to Establish Direct Branch —"Lets Out" Three-Million-Dollar Company.

Despite the fact that the Commer Truck Co. of America was incorporated in March last under the laws of Delaware with a capitalization of $3,000,000 and was generally supposed to be about to continue the Commer business in America, which was interrupted by the failure of Wyckoff, Church & Partridge, of New York City, affairs have taken a different turn. Existing contracts having expired, the Commercial Cars, Ltd., of Luton, Eng., which makes the famous truck, is to establish a direct branch of the parent company for the transaction of its American business, and A. C. Platt, who was connected with Wyckoff, Church & Partridge, will be its manager.

As soon as is possible, the branch will open up in New York City and the marketing of the trucks will be actively resumed. Platt states that he has 18 or 20 trucks practically available for his purpose and is seeking an advantageous location. Later, arrangements for manufacturing in America may be made.

When the Wyckoff company became financially involved there was speculation in the trade as to what would become of the Commer contract, and when the Delaware corporation was formed it was supposed that its future was based on this agreement, but inquiry of those who were directing affairs always failed to reveal anything definite in the way of information.

If such were the plans of the $3,000,000 Commer Truck Co. of America, however, they were dissipated June 30 last, when the contract expired, for it was not renewed; instead, Platt, who had hied himself to England, convinced the Commer company that the best way to handle its American trade with success and prestige for its name in "the States" was through a direct representation, and this arrangement resulted. Branches or dealerships in other cities and an extended selling campaign are included in the branch plans.

Warren Assets to be Resold Monday.

After having been once offered for public sale, and then ordered restored to the receiver, the assets of the Warren Motor Car Co., of Detroit, will be again put on the block on Monday next, 4th proximo. The assets include real estate, buildings, equipment and material on hand. When it was first offered for sale, June 26th, it was bid in by W. C. Rands, of the Rands Mfg. Co., of Detroit, but a legal knot developed and, as Motor World exclusively stated, the sale was not confirmed by the court.

Maxwell Cuts Deep Into Its "Six."

Instead of increasing its prices, as was stated in a paid-for announcement of its New York agents four weeks ago, the Maxwell Motor Co. will reduce the price of at least two of its models. The Maxwell "six" will be reduced from $2,350 to $1,975 and the Maxwell "35" from $1,085 to $1,075 without electric starter and $1,225 so equipped. The price of the Maxwell "25" will be maintained at $750.

McMullen Secures McCue Sales Account.

The increasing pressure of manufacturing demands finally has induced the McCue Co., of Buffalo, to turn over to Roger B. McMullen the entire distribution of its wire wheels and axles. McMullen, who maintains offices in Chicago and Detroit, long has been widely and favorably known to the entire trade.

Willys-Overland Declares Extra Dividend.

The Willys-Overland Co. has declared an extra dividend of five per cent. on its common stock, payable August 10th. This, of course, is in addition to the regular quarterly dividend of 1½ per cent., which is payable August 1st.

RECEIVER FOR R.C.H. FOLLOWS THE CREDITORS' COMMITTEE

"Friendly Proceeding to Assist Reorganization," the Official Explanation — Train of Embarrassment Caused by Excess of Orders.

After having been in the hands of a creditors' committee since November last, the R. C. H. Corporation, of Detroit, was placed in the hands of the Security Trust Co., as receiver, late last week. According to the formal announcement of the company itself, "the receivership is one of the steps in the reorganization plan, the application being a friendly one and made with the endorsement of the entire board of directors and the majority of the creditors."

The receivership follows a succession of rumors that such a move was in contemplation and, therefore, will excite small comment in the trade. In November last, when the creditors took charge and were elected directors, it was stated that the R. C. H. assets exceeded the liabilities by $576,000. Later, in January, the creditors displaced R. C. Hupp as president, and installed J. F. Hartz, president of the C. M. Hall Lamp Co., of Detroit, who in November had been elected treasurer of the R. C. H. establishment. At the same time, Peyton R. Janney was appointed general manager, R. C. Hupp becoming vice-president.

Hupp then practically retired from active participation in the affairs of the company, but it was not until several months later that he formally severed his connection with it and became president of the Monarch Motor Car Co., which, meanwhile, had been organized by his brother-in-law.

When the changes were brought about, in January, it was stated that the R. C. H. Corporation had executed a mortgage on its property which rendered available the sum of $300,000.

During its comparatively short life the company had built up a considerable agency

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system and had also established some very desirable foreign connections, but, like many another concern identified with the automobile industry, it accumulated more orders than its resources would permit to be handled. President Hartz, it is officially stated, will cooperate with the receiver in continuing the business.

Chicago Dealer Suddenly Disappears.

Grover E. Olds, the 24-year-old manager of the Herreshoff Chicago Motor Car Co., dropped out of sight late last week and his present whereabouts are unknown. He was started in business by his father, a retired capitalist, and the business is said to have been profitable, but young Olds is reported to have flown so high in several directions that apparently he deemed disappearance the better part of valor. The Chicago agency, it is understood, will be taken over by the parent Herreshoff company, of Detroit, J. F. Hebbard, its representative, now being in the Windy City for that purpose.

Rajah-Grossman Litigation Terminated.

The second suit of the Rajah Auto Supply Co., of Bloomfield, N. J., against the Emil Grossman Co., of New York City, over the Rajah removable porcelain spark plug patent, No. 825,856, was ended last week when the complaint was dismissed without costs in the United States District Court for the Southern District of New York; the suit was more or less a continuation of an attempt to have the Grossman company held in contempt of court for selling porcelains after it had been enjoined from manufacturing infringing plugs. The contempt proceedings were unsuccessful, as was the following suit.

Raleigh Dealer Demands Jackson Deposit.

Claiming $1,580 as an unrefunded deposit following a breach of contract, the Raleigh Motor Car & Machine Co., of Raleigh, N. C., has filed suit in the Supreme Court for New York county against the Jackson Motor Co., of Jackson, Mich. The Raleigh company signed up as a dealer in 1910 and deposited $2,000, it claims, and had received a refund of but $420 when the Jackson company broke the contract by failing to ship cars as scheduled and by failing to have what it did ship of proper quality, according to the allegations. The Jackson company has entered a general denial.

Castle Lamp to Remove to Toledo.

The Castle Lamp Co., which about a year ago was removed from Amesbury, Mass., to Battle Creek, Mich., is to be removed to Toledo, Ohio. It is one of John N. Willys's properties and the decision to locate it in Toledo is, therefore, not wholly surprising.

INTERNAL CLASH BRINGS WOE TO THE MUNCIE GEAR WORKS

With $400,000 Orders in Hand, Receiver Appointed in Order to Conserve the Assets—Working Capital Impaired.

On allegations that disagreements in the board of directors imperil the creditors' interests and that its liabilities have increased since June 1st and that its assets have diminished, the Muncie Gear Works, of Muncie, Ind., was thrown into the hands of a receiver late last week on the application of E. C. Atkins, of Indianapolis, Eugene Vatet, of Muncie, being named by the court to act as receiver. Among other things, it is also charged that certain assets have been removed from the State.

The Atkins complaint states that on June 1st the Gear company's liabilities amounted to $277,061 and its assets to $204,752, but, despite the alleged increase in one and decrease in the other, it is admitted that the company has in hand orders sufficient to earn a profit of $100,000, which sum is the estimated difference between the assets and the liabilities. These orders are said to amount to $400,000.

Thomas W. Warner, of Toledo, who is president of the company, is reported to have recently loaned it $25,000 as working capital and is credited with stating that since that time it has made net profits amounting to [illegible]

Hugh [illegible]arner, of Muncie, and D. C. S[illegible], a glass manufacturer, are among the largest stockholders.

It is understood that but for differences between the directors the financial stringency might have been bridged. As it is, the factory will be operated by the receiver without interruption.

Because the two Warners were once identified with the Warner Gear Co., of Muncie, the latter concern reports that it is being confused with the embarrassed company when in fact they have nothing to do with it; they long since disposed of their holdings, no one of the name Warner now being in the Warner Gear Co.

Willys Secures Service Station Site.

While most other automobile manufacturers have sought Long Island City as a location for their metropolitan service stations, the Willys-Overland Co. has made a move in an opposite direction, and in seeking a site for an additional service station for Garford trucks has invaded The Bronx; a 21-year-lease has been secured on a plot of land on 150th street, between River and Gerard avenues, and on which the owner, Henry Lewis Morris, will erect a two-story building, 200 x 148 feet. The aggregate net rental is about $275,000.

This station will supplement the one now operated on West End avenue, on New York's upper West Side, by the R & L Co., the Garford dealer in New York, both being operated to care for their respective territories. Another move which concerns the Willys interests is to be made, probably September 1, when the C. T. Silver Motor Co., Overland dealer in the metropolitan district and now located at 1599 Broadway, will move its salesrooms to the place formerly occupied by the accessory department of Wyckoff, Church & Pratridge, at Broadway and West 56th street. Other quarters will be sought for the Silver service station which is now located at the rear of the salesrooms, and which has long since outgrown its location.

Motor Financiers "Go Into" Cars.

Kenton Harman, head of the Harman-Yount Co., which is conducting an automobile financing business, is the prime mover in the Michigan Motor Car Co. of New York, which was incorporated last week and which will handle the Michigan car in New York City. Harman is president of the company, James A. Murphy vice-president and treasurer and C. Anthony Wolfe secretary. Murphy and Wolfe are also interested in the Harman-Yount Co. The Michigan company will locatae its sales room on Broadway, and already has established its service station at 155 West 56th street.

Kellogg Organizes European Company.

The Kellogg Mfg. Co., of Rochester, N. Y., which for some time has maintained an establishment in London, has incorporated its business on the "other side" under the style Kellogg Mfg. Co. (Europe), Ltd., with a capital of $10,000 in $5 shares. In addition to acquiring the Kellogg business at 265 Strand, London, W. C., the objects of the incorporation are stated to be "to adopt an agreement with A. H. Hedinger," who figures as managing director of the new company. Kellogg pumps are almost as well known in Great Britain as they are in this country.

Knox Not to be Sold at Auction.

According to a tentative agreement between the chief creditors of the Knox Automobile Co. of Springfield, Mass., and Charles W. Bosworth, the referee in bankruptcy, the company's plant will not be offered for sale at public auction, as it first advertised. It was decided at the hearing before the referee that a private sale would best serve the interests of all who are concerned.

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TWO SALES DEPARTMENTS ARE MERGED BY HANDLEY

Unites His Interests in American and Marion in New Million Dollar Selling Company—Manufacturing Policies Unchanged.

To unify his interests and effect overhead economies in the American Motors Co. and the Marion Motor Car Co., of Indianapolis, of both of which he is president, J. I. Handley has organized the J. I. Handley Co., which, capitalized at $1,000,000, will consolidate all of his individual holdings in not only the American Motors Co., Marion Motor Car Co., American Motors Realty Co. and A. & M. Sales & Service Co., all of Indianapolis, but the American-Marion Sales Co. of New York and the American Motors California Co. of San Francisco.

The new Handley company will become the sole selling agent of the Marion and American Motors companies, all of the sales, advertising and service departments of both of those manufacturing companies being consolidated under the Handley direction.

The amalgamation will not affect in any way the individuality of either of the manufacturing companies. The American Motors Co. will do its own engineering, purchasing, financing and building and the board of directors and officers will be undisturbed. This also holds true for the Marion Motor Car Co. Under the new arrangement each manufacturing company will have one customer for its product instead of many, and will look solely to the one big customer for successful distribution. On the other hand, this one customer, the J. I. Handley Co., will come in direct contact with the many American dealers and Marion dealers, and it is believed the result must prove happy.

The relationship of the Marion dealer to the Marion car will remain just as individual as it is now, and likewise the relationship of the American dealer to the American Underslung car.

The most immediate result of the new order of things, so far as men are concerned, will be the removal of Vice-president Menasco to the Pacific Coast.

Handley himself will retain the presidency of the American Motors Co. and the Marion Motor Car Co., while V. A. Longaker, chairman and general manager of the American Motors Co., will become vice-president of the new Handley corporation. P. S. Menasco, vice-president of the American Motors Co., will continue in that capacity but will also become president and general manager of the American Motors California Co., which carries with it his removal to San Francisco, where his headquarters will be established.

Church-Field Electric in Trouble.

Aggravating delays in the production of its car, which impaired its working capital, have brought about the appointment of a receiver for the Church-Field Motor Co., of Sibley, Mich. It is believed, however, that its affairs can be straightened out and that the property will be taken over by a new company which will be formed for the purpose.

The Church-Field car itself is an uncommonly appealing electric. In general appearance, it so closely resembles gas cars as to almost defy detection. It not only utilizes shaft drive, wheel steer and a bonnet, but is marked by underhung suspension and a radical two-speed gear.

Magic Powder Leads to Bankruptcy.

The American Voltite Co., of New York, a $2,000,00 corporation which set out to at least partly revolutionize the world by marketing a more or less magical powder which, applied with a cloth, nickeled brass and other metals, went into the hands of a receiver late last week. Its liabilities are $50,000 and its assets $8,000. In a small way, the company attracted some notice in the automobile trade, many repairmen and owners believing that the powder would assist in solving the nickel plating problem.

Big Company Takes up Automobiles.

It is now an a[illegible] that the Standard Steel Car Co., whose [illegible] Into is in the Frick building in Pittsburgh. [illegible] gage in the manufacture of automobiles [illegible] that the big factory now building in Butler, Pa., will be utilized for that purpose. Statements to this effect have been confirmed by Motor World's inquiry. It will be several weeks, however, before additional information will be available.

Gray & Davis Get Detroit Plant.

In order to facilitate deliveries, Gray & Davis, of Boston, Mass., have purchased the Sprague-Waldo lamp plant at 19-23 Harper avenue, Detroit, and will take possession September 1st. This will give the Boston firm four large factories—two in Boston, one in Amesbury, which just has been enlarged one-third, and the new acquirement in Detroit.

Willys Incorporates English Company.

To better conduct his business in Great Britain, John N. Willys has organized and incorporated Willys-Overland, Ltd., with headquarters in London. It is capitalized at $50,000, in $5 shares, and is rated as a "private company." Willys and C. A. George are named as the first directors.

HIGH TEMPERATURES STILL RULE IN NORTHLAND RUBBER

Court Holds Bidwell's League and Its Secretary in Contempt—Cleared of One Charge, Bidwell is Then Sued for $100,000.

Whatever else they may succeed in accomplishing, A. C. Bidwell and his former colleagues in the Northland Rubber Co. are making lots of work for lawyers. Charges and countercharges have followed so thick and fast that it is difficult to keep track of them, but it is clear that at the adjourned hearing on Friday last, before Judge Laughlin in the Supreme Court in Buffalo, James J. O'Shea, secretary of Bidwell's so-called International Automobile League, and the League itself were adjudged guilty of contempt in that they had violated an injunction restraining them from continuing a campaign to secure stock in the Northland corporation by inducing holders of it to exchange their shares for stock in other Bidwell enterprises. Judge Laughlin announced that he will impose punishment as soon as he ascertains that he has jurisdiction.

Efforts of officials of the Northland Rubber Co. to have Bidwell indicted by a Federal grand jury for fraudulent use of the mails in circulating its literature failed of their purpose. Undaunted, however, they instituted a libel suit for $100,000 against Bidwell and three others, charging that their literature had defamed the Northland company. Civil warrants were isued for their arrest, and later Charles E. Grant, who printed the offending circular, was arre[illegible] and released on $1,000 bail. The oth[illegible] warrants were not served, and it is probable that the defendants whose names have not yet been permitted to become public will surrender themselves.

This is the second libel suit filed against Bidwell, the first one, as stated in Motor World last week, having been brought by James Bendure, consulting engineer of the Northland Rubber Co., who claimed that his professional reputation had been injured to the extent of $20,000.

Libel suits apparently being fashionable, Bidwell, it is understood, has brought several on his own account. He is said to have sued all of the Buffalo papers which printed the statement that he was in hiding in Canada when, as a matter of fact, he claims to have been there on business.

At last accounts, Bidwell himself had not yet appeared in court, but his answer to the Northland complaint had been presented. It took the form of an affidavit executed July 21st in Toronto, where it is stated he has been engaged in looking after his en-

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terprises in that particular section of the dominion.

Bidwell's affidavit attacks George C. Riley, a lawyer, who is vice-president of the Northland Rubber Co., and charges him with having assisted in designing the Northland voting trust and a series of contracts through which Bidwell lost control. He admits that he organized the International Automobile League Tire & Rubber Co. which, after internal upheavals, changed its name to the Northland Rubber Co. in March last, and that the International Automobile League was to dispose of the stock under a contract made in December, 1911. Bidwell affirms, however, that the other officers interfered with his orders, rejected his suggestions and precipitated a crisis.

Out of the trouble grew a voting trust and later a new contract was entered into with Bidwell, or his "league," whereby stock held by the voting trust was returned to the Northland company, although the voting power remained with Lawyer Riley, according to Bidwell. A financial settlement of $152,000, which the Northland company claimed Bidwell or the league owed it, was brought about and Bidwell's resignation as president placed in the hands of a lawyer, but Bidwell's hands were so completely tied that he states that early this year he formally resigned.

In his affidavit, Bidwell also declares that by reason of contracts which were executed he was bereft of the power to use proxies. It appears that whenever his "league" sold a share of Northland stock it acquired a proxy to vote it and also an option to buy the stock if the proxy was cancelled. By reason of the contracts, the Northland management acquired control of these "league" proxies and Bidwell was left in the air. Then, apparently realizing that his more or less confiding nature had made him a victim of too many contracts, he began to print circulars and "do things."

Bidwell has found some support in Canada, several Canadian stockholders having joined him in opposing the continuance of the injunction. They join him in asserting that the present management of the Northland company is not to their liking.

Grand Rapids Truck Files Schedules.

Schedules in bankruptcy of the Grand Rapids (Mich.) Motor Truck Co., which were filed last week, disclose liabilities of $124,239.74 and assets of $110,006.81. Frank T. Hulswit, whose claim amounts to $31,694, and the Old National bank, of Grand Rapids, $38,990, are the heaviest creditors. Both claims, however, are partly secured. The first meeting of the creditors of the bankrupt company will be held September 16th next.

WEAVING WEED CHAINS IN WINNING WINDOW DISPLAYS

Providence Supply House Takes Chief Award in Chain Company's Contest—Awards Aggregating $250 to go to Twelve Dealers.

Just what ability in the window-trimming line is possessed by supply and accessory dealers was demonstrated in a contest just concluded by the Weed Chain Tire Grip Co., which was productive of a number of excellent windows, each of which indicated considerable effort and skill. Twelve prizes were offered, totaling $250. In addition, each winner is entitled to a certain amount of advertising in any paper he may select in his locality, the bills to be footed by the Weed company.

The first prize, $100, went to the Waite Auto Supply Co., of Providence, R. I., which arranged its window to represent a little village with houses, roads, railroads and the customary dangerous grade crossings, a snow scene and other effects, into which was woven the danger of skidding and the safety of Weed chains. The Waite window is at the point of a triangle, and miniature automobiles in the layout showed what can happen to an unprotected car. There were numerous wrecks and disasters on cars which had no chains, while the equipped variety found safety. The contest closed July 15 and checks will be mailed to-morrow, August 1.

The complete list of winners follows: First, $100, Waite Auto Supply Co., Providence, R. I.; second, $50, Bannister & Pollard Co., Newark, N. J.; ten prizes of $10 each—Tri-State Supply Co., White Plains, N. Y.; Albert E. Goodby, Providence, R. I.; Hamilton Hardware Corporation, Waterbury, Conn.; Blue Ribbon Garage, Bridgeport, Conn.; Herr & Co., Lancaster, Pa.; Post & Lester Co., Boston, Mass.; Louisville Auto Supply Co., Louisville, Ky.; Dayton & Walker Hardware Co., Paterson, N. J.; Ferris-Dunlap Auto Supply Co., Dallas, Tex.; Bi-Motor Equipment Co., Boston, Mass.

Midland Trustee Chosen After a Tussle.

After a sharp fight between conflicting interests, J. H. McCullough, a Peoria lawyer, has been elected trustee for the bankrupt Midland Motor Co., of Moline, Ill. McCullough was the choice of 156 creditors, representing $102,000, and was chosen over J. D. Metzger, of Moline, who represented 83 claims, the items of which aggregated $83,000.

It is stated that a disputed claim of the Racine Mfg. Co. for $55,000, which the referee allowed to be voted, decided the issue. During the course of the argument, it was intimated that a composition of 20 cents on the dollar would be offered and that the creditors represented by Metzger would oppose it.

There will be another meeting on August 5th in Moline, when the officers of the bankrupt company will be examined. It is stated that a great deal of litigation is in prospect because of allegations of many preferential payments during the four months preceding the filing of the bankruptcy petition.

Great Britain's Exports and Imports Gain.

Great Britain's exports and imports both are still on the up-grade. For the six months ending June 31st last, the export of cars, chassis, parts and tires totaled £2,134,181 as against £1,618,874 during the corresponding period of 1912. The total is made up of cars to the value of £1,092,595, chassis £253,834, parts £291,767 ,tires £395,985. Prior to 1913, the tires were included in parts. The total for the first six months applies only to exports of British goods for, in addition thereto, reexportation was carried on to the extent of £417,658.

During the same period, Great Britain's imports also showed substantial increase—£3,812,441 as against £3,674,773 for the first six months of 1912. The imports were made up of cars, £918,495, chassis £1,003,005, parts £582,653, tires £1,308,288. During the corresponding period of 1912 there were imported cars to the value of £1,121,704, chassis £926,435, parts (including tires) £1,626,595.

Claims Repairman Damaged Her Car.

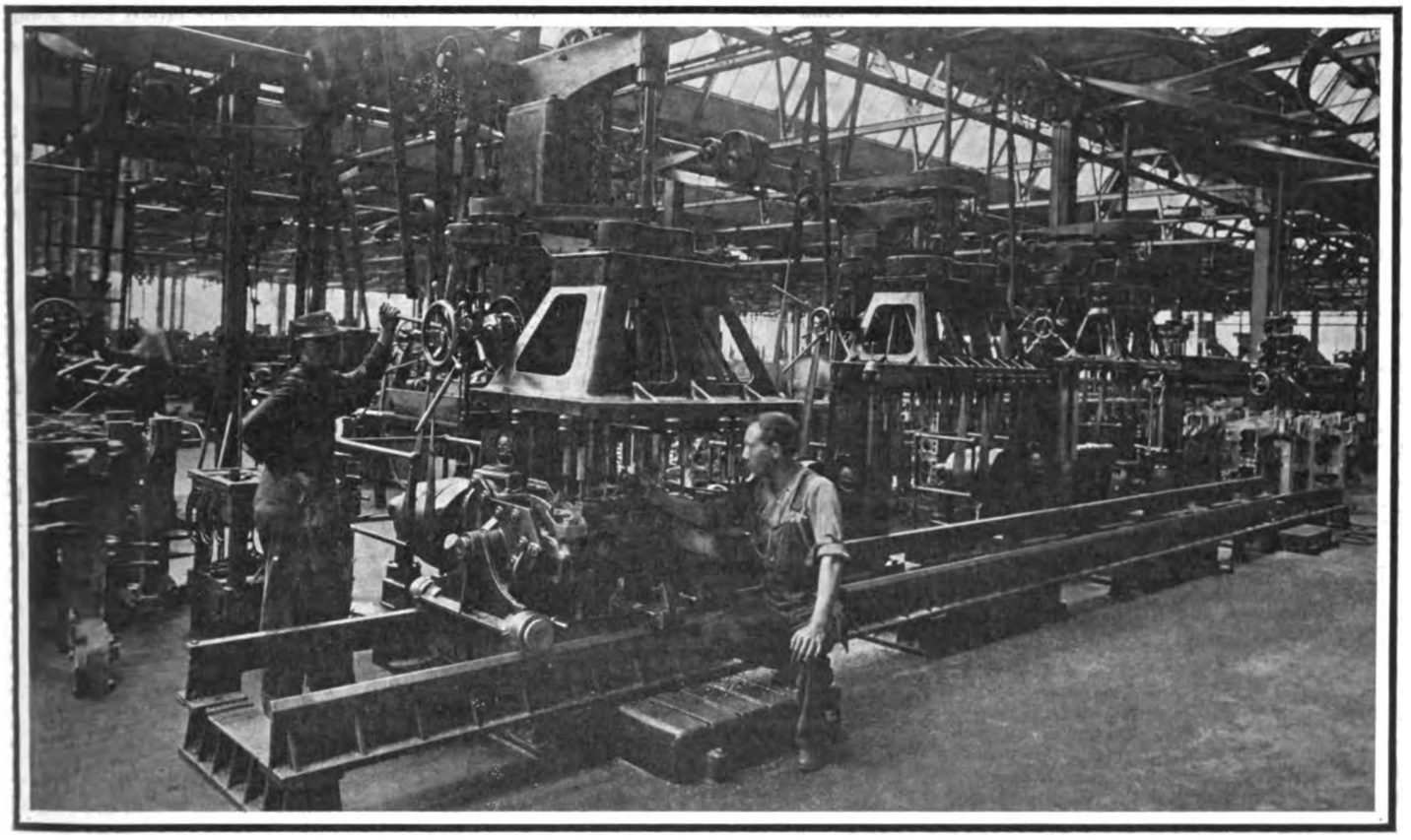
In an attempt to restrain the Auto Construction Co., of 2637-45 Cottage Grove avenue, Chicago, from executing judgment on three promissory notes which she gave it for the repairing of her car, Mrs. Florence E. Kirkpatrick has instituted injunction proceedings against the company. The latter secured judgment June 28. Mrs. Kirkpatrick says she placed her car in the hands of the company in April and that it was damaged while there. The bill rendered was for $568.50.

Dealer is Sued on $2,000 Tire Note.

Edward Maurer, as assignee of the Mansfield Tire & Rubber Co., of Mansfield, Ohio, filed suit this week in the Supreme Court for New York county against the Automobile Tire Co., of New York City, for $2,186.71, which is claimed as the unpaid face of a 90-days note; the paper is claimed to have been given March 14, 1913, for goods furnished. Edward C. Griffith is president of the defendant company.

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The Week's Incorporations



FEW PERSONS OUTSIDE OF MOTOR FACTORIES KNOW WHAT A RAILROAD GANG DRILL LOOKS LIKE. THIS ONE IS IN THE DETROIT PLANT OF THE CONTINENTAL MOTOR MFG. CO. AND CAN DRILL 95 HOLES IN SEVEN MINUTES

Peoria, Ill.—Peoria Automobile Club, under Illinois laws. Corporators—H. C. Roberts, W. E. Hull, S. J. Nelson.

Cleveland, Ohio—The White Co., under Ohio laws; authorized capital, $2,500,000; to manufacture and sell motor cars.

Mount Jewett, Pa.—"DeWitt" Muffler Co., under Delaware laws; authorized capital, $30,000. Corporators—C. E. DeWitt, A. O. Downey, R. B. Rupert

Cleveland, Ohio—Original Auto Polo Co., under Ohio laws; authorized capital, $25,000. Corporators—Ralph A. Hankinson, R. Bert Worthington, A. E. Bernsteen.

Cleveland, Ohio—General Auto Parts Co., under Illinois laws; authorized capital, $10,000. Corporators—F. C. Walsh, M. Kepke, William Radtke, C. R. Cross, J. F. Johnson.

Albany, N. Y.—Capital City Vulcanizing Co., under New York laws; authorized capital, $1,000; to repair and deal in motor cars, etc. Corporators—John W. Giblin, John F. Cregan, Daniel H. Cregan, all of Albany.

Joliet, Ill.—Joliet Motor Co., under Illinois laws; authorized capital, $10,000; to conduct a garage and general motor machinery business. Corporators — W. S. Campbell, John H. Garnsey, Maurice F. Lennon.

Latrobe, Pa.—Latrobe Automobile Turntable & Jack Co., under Delaware laws; authorized capital, $100,000. Corporators—J. Gilligan, Latrobe; T. H. Griffin, W. B. W. Bryan and N. L. Bogan, of Pittsburgh; C. J. Jacobs, Wilmington.

Brooklyn, N. Y.—Bridge Plaza Garage, under New York laws; authorized capital, $1,000; to conduct a garage. Corporators—Charles Beaumann, 210 March avenue; Leo Costello, 55 South Fourth street; Norman Murray, 225 Division avenue.

New York, N. Y.—Eclipse Garage Co., under New York laws; authorized capital, $6,000; to conduct a garage. Corporators—Thomas J. Cardiff, 100 West 71st street; Walter A. Builder, 272 Manhattan avenue; John Mano, 182 West End avenue.

New York, N. Y.—Metropolitan Public Motor Corporation, under New York laws; authorized capital, $1,000. Corporators—James O. Tryon, 30 Broad street; Eleanor A. Mathews, 1698 Topping avenue, Bronx; Clayton R. Olena, 55 Liberty street.

Philadelphia, Pa.—Pennsylvania Omnibus Co., under Pennsylvania laws; authorized capital, $300,000; to manufacture and operate motor cars and establish a taxicab service.

Chicago, Ill.—Automobile Service Co., under Illinois laws; authorized capital, $30,000; to conduct a motor livery. Corporators—H. Decker, S. J. Richman, P. R. Mayer.

Syracuse, N. Y.—Bennett's Garage, under New Yor klaws; authorized capital, $5,000;

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to conduct a garage. Corporators—George F. Brainard, Sidney B. Johnson, George W. Bennett, all of Syracuse.

Wilmington, Del.—American Motors Co., under Delaware laws; authorized capital, $500,000. Corporators—F. A. Hyde, F. B. Smith, Baltimore, Md.; C. G. Guyer, Wilmington.

Claremont, Ill.—Claremont Garage, under Illinois laws; authorized capital, $2,500; to conduct a garage and repair shop. Corporators—James F. Hutchinson, Jacob Diamond, Annie S. Winslow.

Chicago, Ill.—T. S. Wheel & Mfg. Co., under Illinois laws; authorized capital, $2,000; to manufacture motor cars and accessories. Corporators—S. Fred Schulz, Theodore J. Smulski, Stanley Zukowski.

Martinsville, Ind.—Citizens' Automobile Co., under Indiana laws; authorized capital, $25,000; to conduct a garage. Corporators—Walter E. Hendricks, Walter A. Kennedy, Edwin L. Poston and others.

Chicago, Ill.—Stewart Auto Accessories Co., under Illinois laws; authorized capital, $1,500; to manufacture and sell motor car accessories. Corporators—F. W. Stewart, Lesley L. Kennedy, James A. Steven.

New York, N. Y.—Zip Sales Agency, under New York laws; authorized capital, $15,000; to deal in motor car accessories. Corporators—George W. Phillips, Jr., Victor W. Cutting, A. E. Hall, all of 60 Wall street.

New York, N. Y.—Consolidation Auto Supply Co., under Delaware laws; authorized capital, $500,000; to manufacture, sell, deal in and prepare for market all kinds of motor cars and boats. Corporators—H. O. Coughlan, F. Schmidt, both of New York City.

Brooklyn, N. Y.—Rambler Motor Car Co., under New York laws; authorized capital, $5,000; to deal in motor vehicles. Corporators—G. Rudolph Ruckert, 488 Nostrand avenue; B. Fletcher Donnocker, Northport, L. I.; James B. Smith, 467 Grove street.

New York, N. Y.—Twombly Car Corporation, under New York laws; authorized capital, $500,000; to manufacture motor vehicles. Corporators—D. Stuart Dodge, Hotel Ansonia; W. Irving Twombly, 208 West 86th street; Henry W. Jessup, 55 Liberty street.

Increase of Capitalization.

Detroit, Mich.—Traveler Motor Co., from $15,000 to $50,000.

Akron, Ohio—Akron Gear & Engineering Co., from $20,000 to $50,000.

Detroit, Mich. — General Aluminum & Brass Castings Co., from $75,000 to $150,000.

PROMINENT MEN IN TRADE WHO ASSUME NEW DUTIES

Resignations and Promotions That Serve to Place Many Workers in New Places—Few Leave the Industry.

E. R. Hand has been appointed district manager of the Marion Motor Car Co. for the Middle West. Previously he was with the Abbott Motor Co., of Detroit.

Albert S. Halley has resigned the management of the Kelly-Springfield Motor Truck Co.'s New York branch to become manager of the truck department of the Packard Motor Car Co., of Boston.

Cassius F. (Cash) Baker, one of the best known travelers in the West, has connected with the National Motor Vehicle Co. of Indianapolis. His duties, of course, will continue to keep him circulating among dealers.

H. W. MacKaye has been appointed manager of the Keeton Motor Co.'s Detroit branch, which just has been established at 728 Woodward avenue. MacKaye has been identified with the company since its organization and, therefore, is no stranger to his duties.

Wallace C. Hood has been appointed commercial manager of the Empire Automobile Co., of Indianapolis, which carries with it supervision of the sales and advertising departments. Hood was at one time sales manager of the Chalmers Motor Co. and later of the Metzger Motor Car Co., of Detroit.

C. R. Burt, of Rockford, Ill., has been appointed factory manager of the Russell Motor Car Co., of Toronto, Can., succeeding M. MacDonall, resigned. Burt was for nine years connected with Brown & Sharpe, in Providence, but for the past eight years has been general superintendent of the Barber-Coleman Co., of Rockford, which produces textile and automobile machinery and parts.

E. A. Scheu, manager of the Invader Oil Co.'s Boston branch, has been promoted to the post of sales manager, which carries with it removal to the company's headquarters at 50 Broad street, New York. Scheu was for many years with the Packard Motor Car Co. and for eight years New England representative for E. A. Kellam & Co., which firm was succeeded by the Invader Oil Co.

George H. Kelly, manager of the truck department of the Baker Motor Vehicle Co., of Cleveland, has been advanced to the office of secretary and sales director. R. C. Norton, heretofore secretary and treasurer, will continue as treasurer. E. J. Bartlett becomes sales manager of the truck department, and O. B. Henderson continues as sales manager of the pleasure car department.

Minor Business Troubles.

The Federal court in Boston has adjudicated a bankrupt the Taxi Meter Cab Co., which has been in the hands of receivers for some time; it is anticipatetd that about $30,000 can be realized from a sale of the assets. The liabilities are about $210,000.

Harold B. Elgar, as trustee in bankruptcy of the Automobile Fault Finder and Anti-Forgery Electric Pen Co., will auction the bankrupt's assets August 8 at 10.30 A. M. at 535 Broadway; the assets consist principally of anti-forgery electric pen patents.

T. J. Linehan, Jr., manager of the Trumbull street store for the Auto Owners' Supply Co., of Hartford, Conn., has been appointed receiver for the company; a bond has been furnished and Linehan will continue the business for four months. Financial troubles have lately beset the company, which has stores at 284 Trumbull street and in Newington, and which is headed by Former Senator John M. Brady, of New Britain.

The F. L. C. Martin Automobile Co., of Plainfield, N. J., one of the oldest dealers, having started in the bicycle business in 1889 and progressed into the automobile trade in 1902, has filed a petition in bankruptcy; it states that its assets are $102,633.72 and its liabilities $53,533.51. The assets include $18,000 insurance and are otherwise so involved as to be not immediately available. It is stated that the bankruptcy court was sought because of the continued ill health of Martin, who desires to close out the business in order that he may better apply himself to the task of regaining his physical well being.

Recent Losses by Fire.

Oyster Bay, N. Y.—Auto Tire Repair Co., building damaged. Loss not stated.

Freeport, Ill.—J. E. Thompson, 455 North Broadway, garage damaged. Loss, $8,000.

Boston, Mass.—Premier Motor Car Co., Beacon street, garage damaged. Loss, $1,500.

Binghamton, N. Y.—Binghamton Motor Car Co., machine shop damaged. Loss, $1,000.

Ansonia, Conn.—Edward Crane, 79 Elm street, garage and contents damaged. Loss not stated.

Detroit, Mich.—Maxwell Motor Co., one-story storage house containing 100 barrels of varnish, totally destroyed. Loss not stated.

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In the RETAIL WORLD



COLE SALES STAFF AND DEALERS LISTENING TO AN ADDRESS ON STANDARDIZATION DURING THE RECENT CONFERENCE IN INDIANAPOLIS. IT WAS NOT WHOLLY A "DRY" PROCEEDING.. WITNESS THE TABLE AT THE LEFT

The City Auto & Machine Co., of Latrobe, Pa., has completed a new garage. It is located on West Depot street.

John Umbel plans to open a garage in Leatherwood station, W. Va. He will locate in the B. C. Nichol building.

A new fireproof garage has been erected for the Winton agency in Cincinnati, Ohio. It is located at 324 West 7th street.

Holland Garage is the style under which a new business has been launched in Orange, Tex. Judge Holland is the owner.

The Hardman Tire & Rubber Co., of New York, has opened an agency in Philadelphia at 1936 Sansom street; J. A. McTaggart is manager.

The Veihl-Crawford Hardware Co., of Fort Worth, Tex., has entered the automobile trade; it has added both cars and supplies to its stock.

The Neighbors Motor Car Co., of Cleveland, Ohio, has opened a branch in Youngstown, in the same State; it is located at 209 South Champion street and is managed by J. W. Keues.

The Hemet (Cal.) Garage has been purchased by Crosson & Whetstone, of San Jacinto, in the same State. New equipment will be installed and the new owners will operate the business.

The Homer Motors Co., of 1326 Washington building, Los Angeles, is about to erect a three-story, reinforced concrete building, 150 x 350 feet. The site is on San Fernando road, near Arvia street.

The Loveland-Estes Park Auto Co., of Loveland, Col., has had erected on West 4th street a garage which is one of the largest in Northern Colorado. The company operates a fleet of nine Stanley steamers.

Charles Smyth, Jr., formerly half owner of the Cadillac Service Station in Wichita, Kan., has withdrawn from the trade; T. J. Holdridge, Jr., is now in full control of the business and plans to enlarge its scope.

O. D. Strader, of Nicolotte, W. Va., has purchased the interest of L. C. Mead in the Market Garage & Machine Co., of Parkersburg, in the same State; he will incorporate the business and improve the premises.

R. E. Newell has entered the trade in Waterloo, Ia., as a dealer. He has taken possession of the Iowa Auto Co.'s former location at 185 Park avenue West, and the latter concern has removed to a new building at 410 5th street West.

The King Motor Car Co.'s branch in Sioux Falls, S. D., plans to erect a one-story warehouse and garage at 5th avenue and 13th street; this is made necessary by an increase in territory, the branch now caring for all of South Dakota and one Iowa and three Minnesota counties.

Its taxicab business having assumed considerable proportions, the R. D. & C. O. Britton Co., dealer, of 115-21 Allyn street, Hartford, Conn., has incorporated a separate company to handle it; the new concern is the Pioneer Taxicab Co. and has its headquarters at the same address.

Morgan N. Smith, formerly connected with the Cleveland (Ohio) Automatic Machine Co., has taken over the Acme Machine Co., of San Diego, Cal. The company operates a garage on 13th street, between G and Market streets. and has the Hender-

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son agency for both San Diego city and county.

The Dallas (Tex.) Automobile Club has appointed a committee to investigate the feasibility of opening a cooperative garage, supply store and repair-shop for the club members; the committee consists of Gilbert H. Irish, chairman; C. W. Miller, Z. E. Marvin, H. A. Overbeck and J. B. Seeger.

D. S. Kruidenier, proprietor of a garage in Des Moines, Ia., at 1119 Locust street, has plans for a new building to be erected on Locust street, between 11th and 12th streets. October 1 the Cole Motor Car Co., which is now at 17 12th street, will take possession of Kruidenier's present quarters, first having them remodeled.

The Gerlinger Motor Co., of Portland, Ore., has opened a branch in Seattle, Wash., at Broadway and Pike street. Edward E. Gerlinger, the proprietor, has enlisted W. H. Miller, for three years manager of the Pacific Motor Car Co., of Seattle, as assistant manager. Gerlinger handles Herreshoff cars and Menominee trucks.

The California Moline Plow Co., of Los Angeles, has "gone into" pleasure cars; it previously had the International truck agency and has now taken over the Carter-car agency in that city. A. R. Davis, formerly with the Vance-Caravan Co., of that city, is connected with the California Moline's new pleasure car department. C. I. Dorn is its truck manager.

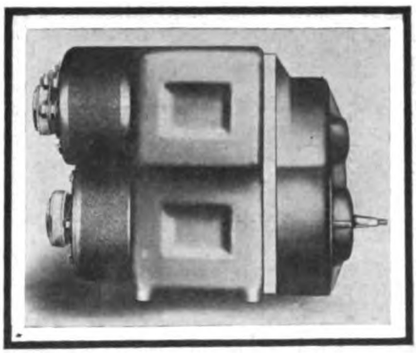
The Pathfinder Pacific Motor Sales Co. has been formed in San Francisco to distribute Pathfinder cars in Northern California, Nevada and the Hawaiian Islands; it has no connection with the Los Angeles distributing house. The officers are: President, James H. Borland; vice-president, J. R. Pringle; secretary-treasurer and general manager, J. M. Whited; sales manager, Barry Cool. The company will utilize a new building on Geary street, near Van Ness avenue, and will maintain branches in Fresno, Sacramento and Watsonville, Cal., Reno, Nev., and the Hawaiian Islands.

A four-story, fireproof building, 100 x 104 feet, with a one-story service building of the same dimensions at the rear, is to be erected in Cleveland, Ohio, at Euclid avenue and East 20th street, for the Cleveland Cadillac Co. T. H. Towell, president of the company, has signed a ten-year lease of the structure which will represent an expenditure of $100,000. It will be ready for occupancy January 1, 1914. The building will be of steel, concrete and brick with a white terra cotta front. The first floor will be devoted to display rooms and a woman's rest room and the second floor to offices. The third and fourth floors will house the mechanical equipment.

Harry B. Blair, of Livingston, Mont., has completed a new garage, 50 x 140 feet, at Clark and Main streets and with entrances on both thoroughfares; the garage includes the customary machine and repair departments and has a modern ladies' waiting room. Blair, who is Reo and Ford dealer, has given his establishment prominence by painting the front of the building a bright red.

Disco's "Double-Decker" Device.

The Disco electric lighting and engine starting instruments, which are produced by the Disco Co., of Detroit, Mich., and which always have been distinctive by reason of the extreme narrowness, are to be still more distinctive, for the manufacturers have brought out a new type of machine quite different from the originals. The new instrument is styled a "doube-decker," from which it may be gathered that it virtually is two machines, one mounted directly over the other; it is shown by the accompanying illustration. One of these is the generator and the other, of course, the starting motor, and they are arranged in this way in order to economize space.



DELCO DOUBLE-DECKER

Although there are separate armatures for generator and motor, there is but a single drive, or rather, a single drive connection; the generator is driven at 2 to 1 with the engine crankshaft, and the motor drives the gasolene engine through a spur reduction gearing, giving a ratio of from 11 to 1 to 30 to 1, according to the size and characteristics of the motor to which it is attached. All of the gears are constantly in mesh, the interposition of a compact four-point roller clutch preventing the motor from being driven by the gasolene engine; as usual, the generator is of the shunt-wound type and its output is controlled by a combination of armature reactions and a bucking coil. The battery is prevented from discharging back through the generator by a new form of automatic cut-out in which there are two sets of contacts, one set being carbon and the other set copper; as the carbon contacts close first and open last, sparking is effectually eliminated. Machines are made to operate on both six and 12-volt circuits, and though the new "double-decker" will be the leader for the coming season, the older type machines are to be continued.

May Manufacture Tires in Seattle.

E. K. and A. K. Allen, Seattle, Wash., who for years have handled either the Pennsylvania or Republic tires in that part of the country, are preparing to go into tire manufacture on their own account. They have invented a non-skid tread and, it is stated, have promises of "practically unlimited financial backing" for the factory which they contemplate establishing in that city.

To Assemble Moreland Trucks in 'Frisco.

The Moreland Motor Truck Co., of Los Angeles, which manufactures the distillate burning truck of that name, is preparing to establish an assembling plant in San Francisco at Fourth and Harrison streets. It will be in charge of J. S. Phillips. The chassis will be built in the Los Angeles plant and the bodies and final touches be applied in San Francisco.

Making Room for More Crankshafts.

The Auto Crankshaft Co. is erecting a brick and concrete addition, 50 x 165 feet, to its plant in Detroit. This enlargement will increase the output to about 75,000 crankshafts per year, an increase of approximately 50 per cent. It is probable that in the fall another building of the same size will be erected on an adjoining plot of real estate.

Multibestos Removes to Framingham.

The Standard Woven Fabric Co., which manufactures Multibestos brake lining, among other things, has taken possession of its new factory in Framingham, Mass. The new plant is very much larger and, of course, more modernly equipped than the one in Worcester, which has been abandoned.

More Money for Grabowsky Creditors.

The Security Trust Co., of Detroit, receiver for the Grabowsky Power Wagon Co., is making a distribution of about $45,000 to the creditors, bringing the total dividend to about 50 per cent. It is probable that another small dividend will be disbursed later.

Walker Electric Gets Into Cincinnati.

The Walker Electric Vehicle Co., of Chicago, has opened an office in Cincinnati at 515 Mercantile Library Building, and later will establish a service station. The office is in charge of C. E. Ogden, as district manager.

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The Motor World Publishing Company
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A. B. SWETLAND, President and General Manager
F. V. CLARK, Business Manager.

EDITORIAL DEPARTMENT
R. G. BETTS, Managing Editor
S. P. McMINN HOWARD GREENE
R. W. SHERMAN

ADVERTISING DEPARTMENT
BROCK MATHEWSON, Manager
New York Office
1600 Broadway
HOWARD L. SPOHN LOUIS R. SMITH O. H. ADAMS

Western Office
1001 Ford Bldg., Detroit, Mich.
W. H. TRIPP, Mgr.

Detroit
1001 Ford Bldg.
MAXTON R. DAVIES

Cleveland
610 Superior Ave. East
C. H. HANDERSON

Chicago
Room 510 Harvester Building
606 South Michigan Avenue
H. A. WILLIAMS

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SEEING THE LIGHT IN GREAT BRITAIN.

From the day the American automobile first appeared upon the British market the British public, with great unanimity, decried it, characterizing it as homely and uncouth, as rough and unrefined, as over-engined and overweighted—in short, as a thing very different from the home product and, therefore, far less desirable. While it is true that to a certain extent this expression of feeling has been prompted by intense patriotism and loyalty to indigenous products, it is more than hinted, even in John Bull's own territory, that not a little of it has emanated from sources not unconnected with the British automobile industry.

But while trade-fostered anti-American sentiment may be expected to endure to some extent regardless of facts, however cold and hard, the Britisher who shouts for the "all-British" car because he honestly believes it is the best is amenable to reason, and not a few thousands of his ilk have been discovering that the trouble with the American car has been in the British point of view, so to speak. The British point of view is naturally the result of observation of British conditions, and they are so radically different from American conditions as to render the resulting deductions worse than worthless. The oft-repeated fact that the American car is built for American roads, and its correlative fact that American roads are abominable, must be considered when passing on the relative merits of the cars, and it has happened time and again that over-seas visitors who have observed the American car in its native habitat have been unreservedly converted and have said so.

A member of the party of British automobile engineers which recently visited this country has written of his impressions to an English motor paper, and he is not slow to point out the fallacy of judging a fish by its actions on dry land. After an outburst born of his first intimate acquaintance with American roads, he says: "The first country run does more than educate the visitor in regard to the road system; it raises the American car many points in his estimation. A production which can give satisfactory service under such truly awful conditions has to be made well, and has, moreover, to be specially designed for its work. It may sound dreadful heresy; nevertheless, let it be said right away, as definite expression of opinion, that the average English car, constructed for and tested on our own roads, would not stand up for six months under such treatment."

Not only is this true—as has been appreciated by Americans from the first—but it also is true, as the British correspondent further remarks, that the reason for the fact that British colonies seem to prefer American cars is that they are built for just such roads as exist in the colonies, while British cars are not. While European cars are very good cars under European conditions, they are entirely unsuitable for really rough going. On the other hand, it stands to reason that an American car, which is capable of giving good service on abominable American roads, should be able to move as well and last very much longer on the good roads of Europe. And the way in which American makers sell their cars in competition with the British or other European product, would seem to indicate that there is much in this reasoning, despite the loud cries of foreign dealers concerning the cheapness and nastiness of everything that is American, particularly automobiles.

WHY THE TREND TO LEFT-SIDE STEER.

The increasing rapidity with which automobile makers are embracing the doctrine of left-side steer brings into strong relief the fact that the principle involved has been recognized from the first.

The American driver always has been on the right side because that is where he was when all Americans were Englishmen; but in those days the rule of the road was, as it now is in England, "keep to the left," and the driver on the right could clearly see the vehicle he was passing. In changing the rule of the road, however, Americans have retained the right-hand driver's position—an anomaly that has persisted for so long that it has been not a little difficult for many people to see why it should not continue to exist. The driver on the left side can see those things that he most needs to see—the vehicles moving in the opposite direction—and the things that are on his right and therefore less easily seen are stationary or else moving in his own direction, and therefore less menacing.

Drivers experienced in left side steering state emphatically that accidents are more easily avoided than when the wheel is located on the right.

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ONE TALE OF FOUR BULLS, OR, WHAT IS A BULLKONN?

Being the Narrative of the Deeds of a Quartet of Bovine Gentlemen to Anger Stirred—What, Whom, How and Why They Did.

"Once upon a time there were three Jews," is the burden of a song which has been sung more or less for years, but for the purposes of the present occasion the line is altered to read, "Once upon a time there were three bulls." Which means that this is a bull story—not the kind that is sometimes "shot" by automobile salesmen, but the kind which sailed with Noah in the ark, and is therefore an ancestor of all things bovine.

Rather, there are four bulls, but only three bull stories. As to the first one, Dr. M. F. Maxwell, president of the County Fair Association, of Paris, Tex., is the sponsor for it and the owner of the two bulls that play the leading parts. While not actually sworn in, the bulls—the Durham breed—took the parts of three or four dozen deputy sheriffs at a racemeet which the association recently staged, and the doctor won several hats by demonstrating that he could keep the curves of the county fair dirt track cleared of spectators without an army of deputies.

When the doctor was informed that he could not stage the meet unless the curves were kept free of people, there were those who anticipated trouble for the physician—the "those," however, did not include Dr. Maxwell. When the 4,000 spectators flocked upon the field some of them jumped over the fences and made for the large, clear fields about the ends of the curve. But they much more speedily jumped right back again, for they were greeted by the two Durham gentlemen, who seemed to appreciate the fact that they had been deputized to keep the "fool public" away from those curves.

Look out! Here comes another bull! This concerns Joseph Coffee, of East Orange, N. J., and the next time he spots a herd of cattle in the road ahead it is safe to assume he is going to be more considerate of the bovine feelings than he was Sunday, 27th inst., when he encountered several lady cows and their gentleman escort on the road near Canajoharie, N. Y. Also, it isn't safe for a red car from "Jersey" to take liberties with "Yoke State" cows.

Coffee, perhaps, isn't entirely to blame, for those who use the highways of any part of the world are familiar with the cow's womanly habit of changing her mind at the last minute and deciding to cross the road just as a vehicle approaches. One of the herd which did this was struck by the car and she forthwith bellowed for help—and not in vain.

The gentleman cow hurried to the scene. He took one look at Coffee and the car, said "Oh! So you did it, did you?" and proceeded to "make a bum" out of the little red gasolene wagon. The car may get over it, but it will never be the same car. But that didn't terminate Coffee's troubles, for the owner of the herd, not satisfied with what the bull had done, had Coffee arrested and the outcome of the legal end of the matter will depend upon the outcome of the cow's injuries.

Bull No. 4, the hero of bull story No. 3, lives in Huntley, Ill., and his master is Peter Breen, a farmer; that is, Breen always considered himself the master until last week, when he went out into the pasture to issue orders to the bull. A young rebellion ensued immediately, and the rebellious subject had broken three of Breen's ribs and was just trying to locate a fourth when a motorist saw Breen's predicament. The car driver took down a pair of bars, honked his horn as ferociously as possible and put the bovine fighter to flight.

Cheyenne Church on Motorists' Trail.

Since the church attendance fell off this summer because those who attend in bad weather would rather motor when the days are fine, the clergymen of Cheyenne, Wyo., not being able to bring the motorists to church, have decided to take the church to the motorists; a majority of the car-owning church people spend their Sundays on Sherman mountain, wherefore the clergymen have decided to inaugurate a church service at this place on Sundays. It is estimated that this "nearer-Heaven" location will draw an attendance of about 400.

The services are to be not exactly denominational, for clergymen of several denominations will take part and an effort will be made to make the venture appeal to the public generally.

A. C. A. Bows to Blue Book Copyright.

The suit brought by the Automobile Blue Book Publishing Co. against the Automobile Club of America for infringement of copyright in the publication of the Tour Book issued by the club has been settled out of court. In the settlement the A. C. A. makes a payment of $7,000 and withdraws its contemplated road book from publication for this year. The club also agreed to purchase 1,000 Blue Books for distribution among its members. In their complaint, the Blue Book people charged that the A. C. A. had "pirated" their maps and road data, even to the "lifting" of errors.



*Indicates Sanction by A. A. A.

Aug. 3, Wichita Falls, Tex.—Track racemeet under auspices of J. A. Sloan.

Aug. 7, Amarillo, Tex.—Track racemeet under auspices of J. A. Sloan.

Aug. 9, Brooklyn, N. Y.—Motor Dealers' Contest Association's track racemeet at Brighton Beach.

Aug. 9, Santa Monica, Cal.—Santa Monica Road Race Committee's road races.

Aug. 10, Pueblo, Tex.—Track racemeet under auspices of J. A. Sloan.

August 12, Kansas City, Mo.—Kansas State Automobile Association's reliability tour.

Aug. 15-16, Denver, Col.—Track racemeet under auspices of J. A. Sloan.

August 18-22, Milwaukee, Wis.—Wisconsin State Automobile Association's fourth annual reliability tour.

Aug. 25-28, Houston, Tex.—Houston Automobile Club's reliability tour.

August 29-30, Chicago, Ill.—Elgin Road Race Association's road races.

August 30-September 6, Chicago, Ill.—Reliability tour of the Chicago Motor Club.

Sept. 1, Columbus, Ohio—Columbus Automobile Club's track racemeet.

Sept. 9, Corona, Cal.—Speedway track races.

Sept. 12, Youngstown, Ohio—Canfield Fair Association's track racemeet.

Sept. 13, Covington, Ky.—Cincinnati Automobile Club's track racemeet.*

Sept. 13, Grand Rapids, Mich.—Grand Rapids Automobile Club's track racemeet.

Sept. 20-21, Detroit, Mich.—Track racemeet under auspices of Michigan State Fair.

October 4-11, Chicago, Ill.—Chicago Motor Club's Around Lake Michigan reliability tour.

Oct. 10-17, Paris, France—Annual automobile salon.

November 4-5, El Paso, Tex.—El Paso Automobile Club's road race between El Paso and Phoenix, Ariz.

Nov. 6, Phoenix, Ariz.—Track racemeet under auspices of State Fair Association.

November 24, Savannah, Ga.—Vanderbilt Cup road race under auspices of the Savannah Automobile Club.*

November 27, Savannah, Ga. — Grand Prize road race under the auspices of the Savannah Automobile Club.*

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GALVESTON BEACH HONORS ARE WIDELY DISTRIBUTED

Disbrow Takes "Big" Race but Others Earn Their Keep—Nikrent Badly Hurt—Time Trials Declared Void Because of Timer.

Galveston, Texas, which has a section of beach hard rolled by the Gulf, and which has been trying for three years to mantle itself with some of the glory which once attached to the Daytona beach in Florida, made its 1913 bid for popularity and publicity this week with a three-day automobile racemeet in connection with the Galveston Cotton Carnival. The events were run Monday, Tuesday and Wednesday, 28th, 29th and 30th inst., and there were races aplenty, the feature being a 300-mile $5,000 sweepstakes run in three sections, 100 miles each day for three days.

In this big event, although Louis Disbrow in his Simplex was the winner, it was by no means a walkaway. Disbrow took the first and third "installments" but lost Part II to Ferguson. Totaling his time for the three parts gave Disbrow the race by six minutes. His time was 4:17:23.90; LeCain (Stutz) was second in 4:23:25.45. Bill Endicott in a Case was third, and Moseley in a Studebaker, fourth. The prize of $5,000 was split, $2,500, $1,200, $500 and $300, with $100 added for the winner in each of the five classes which were admitted to competition.

The first day's running of 100 miles went to Disbrow in 83:59.48 and second place was taken by Chandler in a Mason special. Endicott captured third position. At the close of the second 100 miles the best time for this section was accredited to Ferguson in a Peugeot who totaled 83:57.30. Disbrow was second and LeCain and his Stutz third. In Part I of the feature event, Mulford gave Disbrow a neck and neck fight for the first 25 miles, or until he broke his clutch, which put him out of the running. The Peugeot developed trouble after winning the first day's 15-mile event and could not be started until the mechanicians had worked an hour and a half on it. Ferguson, however, found his speed again on the third day, and won the 25-mile, Class E, 450 cubic inches displacement event in 22:26.

In the last event of the last day, a 10-mile free-for-all handicap, Joe Nikrent, in a Case, was badly injured. There were twenty starters, the beach was crowded, and after Nikrent had forged to the front he pulled over too far from the sea and his car dropped into loose, soft sand. The steering wheel turned in his hands, all four wheels collapsed and the wreck collided with two empty touring cars which were drawn up along the course. Nikrent was the only one injured; his stomach was cut by barbed wire of a fence and his recovery is by no means assured.

The mile time trials were unsuccessful. The automatic timing device failed to work satisfactorily and all of the trials were declared void and the entry fee returned.

The race management announced at the close of the contest that larger prizes would be awarded next year. Just before the opening of the meet the center section of the grandstand collapsed but no serious injuries resulted and this minor accident had no effect on the holiday crowd. The summary:

Monday, July 28.

Ten miles, Class E, 230 cubic inches and under—Won by George Dewitt, Gila Monster; second, Moseley, Studebaker special; third, Mulford. Mason special. Time, 11:07.85.

Ten miles, Class C, Division 3, 231-300 cubic inches — Won by Chandler, Mason special; second, Ulbrecht, Case; third, Horan, Mercer. Time, 9:58.20.

Fifteen miles, Class C, Division 4, 301-450 cubic inches—Won by Ferguson, Peugeot; second, Mulford, Mason special; third, Rickenbacher, Mason special. Time, 11:59.29.

One mile, free-for-all, flying start—Louis Disbrow, Jay-Eye-See Fiat, time 32.10; Ferguson, Peugeot. Time, 35.14.

First 100 miles of 300-mile, 3-day, $5,000 Carnival Sweepstakes—First, Louis Disbrow, Simplex; second, Chandler, Mason special; third, Bill Endicott, Case. Time, 83:50.40.

Tuesday, July 29.

Ten miles, Class C, 161-300 cubic inches—Won by Chandler, Mason special; second, Bill Endicott, Case; third, Mulford, Mason special. Time, 9:09.82.

Twenty miles, Class E, 450 cubic inches and under—Won by Mulford, Mason special; second, Ferguson, Peugeot; third, Bill Endicott, Case. Time, 15:59.

One mile, free-for-all, flying start—Disbrow, Jay-Eye-See-Fiat, time 31.11; Ferguson, Peugeot, time 34.20.

Ten miles, Class E, 230 cubic inches and under—Won by Mulford, Mason special; second, Dewitt, Gila Monster; third, Moseley, Studebaker special. Time, 9:41.20.

Second 100 miles of 30-mile, 3-day, $5,000 Carnival Sweepstakes — First, Ferguson, Peugeot; second, Disbrow, Simplex; third, Le Cain, Stutz. Time, 83:57.30.

Wednesday, July 30.

Last 100 miles of 300-mile, 3-day, $5,000 Carnival Sweepstakes—Won by Disbrow, Simplex, 4:17:23.90, $2,500; second, J. LeCain, Stutz, 4:23:25.45, $1,200; third, Bill Endicott, Case, 4:46:21.56, $500; fourth, Moseley, Studebaker special.

Twenty-five miles, Class E, 450 cubic inches—Won by Ferguson, Peugeot; second, Endicott, Case; third, LeCaim, Stutz. Time, 22:26.

Ten miles, free-for-all—Won by Endicott, Case; second, Rickenbacher, Mason special. third, Disbrow, Simplex. Time, 12:17.40.

"200" Club Means Both Miles and Members.

Just what is the meaning of the "Chicago 200 Club," which organized and held a trial for admission of its first members early this month, is made plainer by additional information regarding this form of organization, which now bids fair to take more or less hold in other cities; Detroit is about to inaugurate one, and hopes to do better than Chicago did, the latter city having but 13 in its initial trial.

The "200" has a dual meaning; it means both 200 miles and 200 members. The former stipulation is fixed, but the latter may be increased, if necessary, by a vote of the club. To become a member a car owner must give notice that on a certain day he will attempt to drive 200 miles in not more than 10 or less than 9 hours, not covering the same road twice and not stopping his motor. If he succeeds, he is a club member, and if he fails to start or fails to achieve what he attempts he is penalized $5. Members will be given a gold wheel badge with a white enameled tire, and for every succeeding 200 miles negotiated a gold spoke will be added to the wheel. In other words, the 200-mile non-stop run will be to members of the club what a century run is to bicyclists whose rules provide for similar self-decorations.

The promoters of the project state that the object of the organization is to increase touring on the part of car owners. Many now are familiar with the roads surrounding the cities in which they reside but permit a chauffeur to guide the car when on tour, whereas under the club arrangement a car owner must be the driver.

Sheriff Arrests Entire Motoring Club.

A distinction which is unique, to say the least, attaches to the Grand Junction (Col.) Motor Club, for every member has been arrested and fined, but this does not imply that an arrest is essential to membership; the distinction is further unique in that the records of arrest were established all on the same day. All of the club members were out in their cars on a recent Sunday and what the sheriff thought of the way they drove was learned the next morning, when he haled the whole club before the judge. Fines of from $25 to $600 were imposed for speeding.

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SERVICE — THE GREAT ASSET

Business Quality Which Exerts Powerful Grip on Garageman's or Dealer's Patrons—How it Made a Business "Grow in a Day."

On every hand, in every line of business, the observer notes the strong, powerful grip exerted by that undefinable element in business that is nevertheless very tangible to every customer—Service. Each business has its peculiar forms of "service." In most of them it is not included in the contract nor wrapped up in the package, but it makes itself felt just the same.

Tell Employes What Service Can Do.

Employers can do no greater task for employes, for themselves, for their business than give to employes a clear and definite idea of what "service" means to the "house"; how it attracts and holds trade in spite of price competition; how it secures better prices; how it gets the preference; and in general promotes the most satisfactory business relations. "Service" is the keynote of modern business. It works just as effectively for a small institution as for a large one and creates word-of-mouth advertising that cannot be beaten.

A man does not have to wait till he has been in business several years before he gives "service." The first customer he has can be made to feel the spirit of it—the reality of it. And just as sure as he feels it he will begin to boost. And that "boost" means another, perhaps several more, customers. For service builds trade faster than any other element in business.

Two Young Men Who Started Right.

Two young men got out of a job through the failure of the factory with which they were connected. They were practical mechanics. They had no fancy ideas about business; they had saved a little money and they decided to risk it in a small garage. They knew automobiles and they had some friends who knew they could do good work, who knew they were honest and conscientious and dependable. They rented a stable for a workshop and then sent notices to a few people. First day they got one job; second day two or three. After the first week they had four men working for them—and they averaged seven to ten repair jobs on hand all the time.

Thorough Work and "Service" Did it.

They did not have even proper equipment to start with. Often they had to go out and borrow a tool or have the work done for them; but they kept at it and the work they did was thorough. When they took an order for "doping" a rear axle they actually put the grease in it; they never short-changed their customers. They worked like Trojans. Pretty soon they were able to tackle any job. In four months they had rented a garage on the main street of the city and were enjoying a more profitable business than many older concerns.

Pinned right down to brass tacks, the one feature that made their business and attracted customers was "service." Service to them meant not only doing what the customer ordered but looking over a car with a view to seeing what else was the matter and remedying that; promptness and truthfulness about delivery of work; alertness for the interest of the customer—and always a disposition to favor the customer. It has won big things for them already; it is going to bring into their hands a still greater business.

VALUE OF KNOWING LIGHTING AND MOTOR STARTING SYSTEMS

The lighting and starting system is one of the strong selling points of present-day cars; prospects are anxious to know about them, and no salesman can afford not to be informed about them. Knowing your own system is not enough; you should be posted on the type which is installed in your competitor's car. If a Y. M. C. A. offered a course in these systems many salesmen might be tempted to take it; but this is unnecessary.

Practically every system in vogue has been described in detail in a series which recently concluded in Motor World; these technical analyses are written in a manner which is comprehensible to the untechnical salesman as well as to the man of greater engineering knowledge. Motor World has received numerous requests from men for copies which they had lost containing some one of these descriptions. If you haven't done so, dig into the back files of your Motor World and give yourself a course in starting and lighting.

UTILIZING GARAGE SPACE TO THE BEST ADVANTAGE

How to store the largest number of cars in the space at your command and how to keep customers from encroaching an extra foot or two and thus displacing one or two cars on a side, is a task that is well worth figuring out. The difference between storing 60 cars and 66 by using every foot of floor space intelligently is a nice comfortable little profit.

Ed Brosch of the North Woodward Garage in Detroit has worked it out, down to the last six inches. He has taken the standard tread and figured out a space that will accommodate cars of ordinary width and then marked it out on the cement floor with white paint. Each space is numbered. Each customer is given a number. He knows exactly where his car goes. When the big garage is filled up at night it is impossible to see where one more car could go. There is absolutely no waste of space, and yet there are very few accidents to fenders or bodies, because each man watches the line carefully and keeps his car on his side of it.

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CREATING DULL-TIMES TRADE

Methods by Which a Dealer Filled His Store with Customers When Stock Was Moving Slowly—Cut Prices Sold "Uncut" Goods.

An automobile equipment company that had been having a rather dull time decided to stir things up and see if there really was any business obtainable. They thought they could not afford to advertise in the local papers because the rates were so high—and besides they did not have the money. They did not even wish to expend money for a painted sign, but they made up their minds to get people into their store some way or another. They succeeded; and this is the way they did it:

The Sign that "Waked Folks Up."

On Monday morning their store opened up with this sign in the window—made by hand with a marking brush and lamp black:

"Cut-price Sale Auto Supplies
1/4 to 1/3 off Everything
Except .....
Reason: Going to take inventory
—want stock as low as possible."

There were about 20 different things displayed in the window and each bore a hand-made price tag with the "original" and discount price. When a caller got inside he found everything tagged with prices in plain figures. On every hand he saw things he needed at attractive prices. He went in to buy one or two things and came out with half a dozen.

People told their friends about it. By the end of the week there was comparatively little stock left outside lamps, chains, and a quantity of standard supplies that caused no worry. One feature of the sale that proved intensely interesting was that in spite of the fact that there was no cut on certain trademarked goods, like Twitchell gauges, etc., the demand for these at regular price proved steady—and more of them were sold than had been handed over the counter in six months before.

The proprietors were careful to treat every customer with the utmost courtesy—and they explained carefully the contracts they were under not to cut the price of certain goods—and in every case the explanation was accepted without a murmur. The sale lasted in all two weeks. It meant much to the concern, for it opened a new line of customers and turned stock into cash at a time when money was needed. They are planning to repeat the idea next July.

PROOF THAT IT IS POSSIBLE TO MAKE NOVEL TIRE DISPLAYS

The Detroit branch of the Firestone Tire & Rubber Co. evidently has come to the conclusion that there is an opportunity for a tire store to have a window display that is not a pile of tires or three tires placed in triangular fashion. Heretofore that has seemed to be the limit for a tire display anywhere and everywhere.

This Firestone new window display consists of a tube—ground to pieces by driving on a flat tire. It shows the results as nothing else could show it. Next to it is a card reading: "This tube was driven four miles on a flat casing. Next time you are in trouble 'phone Firestone."

Tire Wisdom and What Comes of It.

The opportunity for teaching tire wisdom by means of carefully planned window displays is a big one. So far it has apparently been overlooked. The practical idea worked out by the Firestone branch suggests a variety of displays such as a casing and blow-out, showing how the big blow-out developed from a small cut that was not attended to; another one showing the effect of unequalized brakes or oval brake drums on tire casings; a display showing the effect of running tires with wheels not properly lined up, and so on down the whole list of tire trouble causes and effects.

A display has to be just a little bit out of the ordinary to attract attention. Anyone who noted the large number of persons who paused and looked at the practical Firestone display would appreciate the fact that passers-by notice the slightest change in window trtimming—and the secret of getting attention is "change."

EFFECT OF THE TIME-WORN "JUST OUT OF IT" EXCUSE

There is one garage in the Middle West that is perennially and perpetually "out of" something. One week it is cylinder oil; another time it is transmission oil; again it is gasolene. It is a pretentious garage, too—one that sells a fine line of cars and has a handsome display window. But its customers cannot fail to notice this strange "just out of it" condition that usually prevails, and the comments created are far from favorable.

Frankly, it is not good business. It is disappointing to go again and again and find that the staple article wanted is not available. Perhaps you like the man and you will be loyal to him for a long time, but sooner or later you will decide that it doesn't pay to bother going to Blank's Garage—"more than likely he won't have it, anyway."

There is a screw loose in the stockkeeping system. All his oils and greases are purchased in town from a wholesaler. It is so handy that he neglects to keep track of how fast they go. Thus time and time again he has to disappoint customers and offer an apology instead of selling goods.

Have any of the readers of this department a simple, practical stockkeeping system? If you have worked out something that does the work, send it ito the Wide-Awake Merchandising Department of the Motor World.

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TWO WAYS OF RENDERING FIRST AID TO THE DITCHED

How to Haul Out a Helpless Car with Simple Appliances—Effective Combination of Block and Tackle, Jack and Rocks.

One of man's favorite occupations is building unto himself machines that are far bigger and more powerful than he is, and, by dint of the ascendancy of mind over matter, making these great engines do his bidding in various ways—such, for instance, as carrying him around the country faster than he could run, had he even a thousand legs. Occasionally, however, something happens to one of his monsters. Perchance it may fall into a hole or go backwards into a ditch, so that despite all the cunningly contrived doodads in its belly it cannot wriggle out, even with its master—man—on the job.

And right here is where mind has an excellent opportunity to demonstrate its mastery over matter—only the matter must be of a certain sort, or it will not do what it is told. If, through some miserable mishap, a car has landed with its rear wheels in a deep ditch and it cannot be dragged out by main force in the shape of a couple of teams of horses, either of the methods shown in the accompanying illustrations may be adopted—or, at least, tried. It is better to try something that maybe won't work than to sit and look at the car and say bad words about things in general.

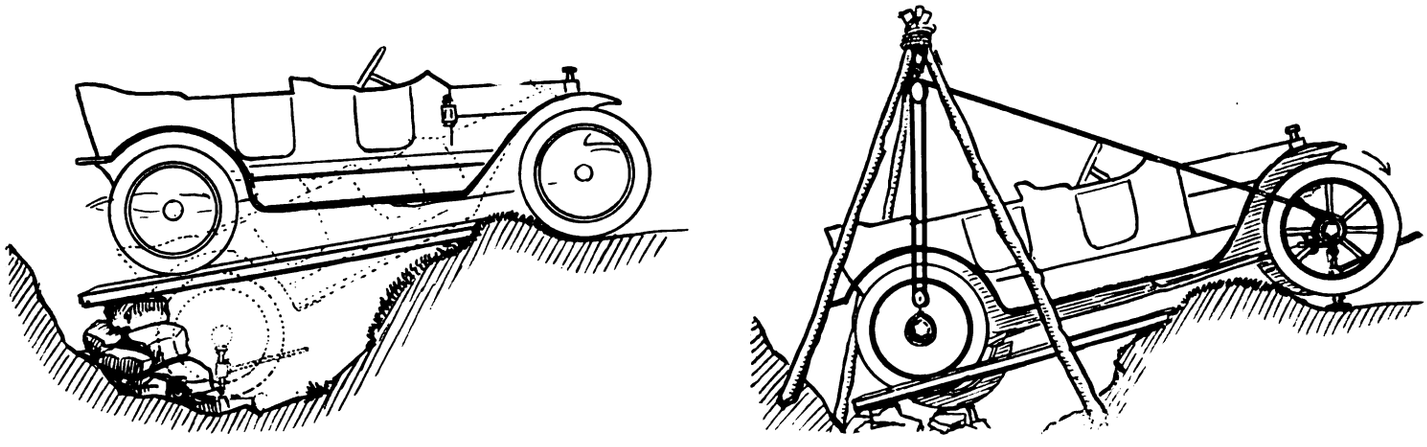
If there are a couple of good, heavy planks available, a good supply of big rocks and a jack in the toolbox, it may be possible to bring the car up to a position so nearly horizontal that the motor, if it is in working order, can pull the car out. It is a case of little by little. The first step is to jack up each rear wheel and work in the planks, making sure that the "shore ends," so to speak, are well bedded on the bank. All the height gained by the lifting of the jack should be saved—or, at least, as much of it as possible—by placing stones under the boards.

The planks must be jacked up one at a time and a little at a time and the process repeated over and over, each time the stone packing being increased. There are several things to be remembered in doing this work. One is that in all probability it will be impossible to lift more than one wheel at a time, unless the jack is far more powerful than the usual "regular equipment" jack, or else the car extremely light, for owing to its tilted position the lift would be vastly heavier than with the car in a horizontal position. Another is that the jack, with nothing under it, probably would bury itself in the ground before consenting to shove the car up; a flat rock or a piece of plank under the jack would act as a "snowshoe." Still another is that not a little art would be required to arrange a pile of straggling rocks so that they would afford a decently firm support for the planks and the car—especially about the time the clutch was let in. Still, far greater obstacles than these have been overcome, and with the requisite jack, planks, pluck and perseverance a car can be worked out of an extremely awkward predicament.

If it is possible to augment the wrecking outfit by the addition of a set of shear-poles and a block and tackle, the work may be done with less trouble, less danger and more certainty of success. Good, big, husky shear-poles are necessary, and a good stout set of tackle, for, as has been said, the position of the car makes it necessary to handle a great deal of weight. The process may be practically the same as with the jack, except that the wheels are lifted from above by the hubs. Where the tackle is employed the jack plays another part altogether. The front wheels may be raised—one at a time—and the rope pased around the hub a couple of times, or, if the hub is not of a suitable shape, around a spoke, and the tire pulled around. In this way an enormous leverage is available, and the load could be held at any point by blocking the wheel, or by securing the rope so that it could not run down.

As to using the hubs as indicated, some care would be required, for though there are hubs that would be long enough for the purpose, they might not withstand the strain, and it might be better to hook the tackle onto the spokes of the wheels, or even the rims, though such a proceeding might be disastrous in its effect upon the mudguards.

It is not out of place to remark that there are occasions where the horse, whether emancipated or not, is a distinct blessing, and one such occasion is when a car is in a hole that it cannot pull itself out of. A good team intelligently handled, a couple of planks and strong hands to wield them, will do more in the rescue line in an hour than most any other system will do in a day. But if man's best friends are not within reach there is nothing for man to do but to befriend himself, and these suggestions may perhaps help some one to do so.



TWO WAYS OF RESCUING A DITCHED CAR; JACKING OUT AND HOISTING ON SHEARS

Making the Fan Generate Electricity.

The middle of a fan is of very little use in moving air, the inner sections of the blades serving as supports for the outer ends, which do the bulk of the real work. Therefore, in enlarging the hub of the fan and building into it an electric generator which is driven by the same belt that drives the fan the Kouyoumjian Electric & Mfg. Co., of Cleveland, Ohio, is, while detracting practically nothing from the efficiency of the fan, making an almost revolutionary departure. The Temco generator, as it is called, is designed for furnishing current for starting and lighting systems. It weighs but 10 pounds and is mounted on ball bearings. A factory for its production is now being erected in Cleveland.

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HUDSON LINE ONE "SIX" AND WITH LEFT SIDE STEER

Latest "54" Bigger and Better Looking than its Predecessors—Four-Cylinder Model Discontinued but "Little Six" Coming.

From the day it first came into the automobile world, a year ago, the Hudson "six" was anything but a small car. With its husky 54-horsepower motor and everything else in proportion, it was a good, big machine, despite its moderate price. Whether it was because the motor acted like a man doing a boy's work, or because the Hudson Motor Car Co., of Detroit, just came to the conclusion that popular feeling was in favor of a larger car, however, the latest Hudson "six," which still bears the designating number 54, is a distinctly bigger car than its predecessor, though the motor is unchanged except in detail and, stranger yet, the price has grown shorter as the wheelbase grew longer. The seven-passenger touring car, for instance, now lists at $2,250, as against the old price of $2,600. Speaking in terms of values instead of comparative money prices, there is a considerably greater difference, because not only is the new car a bigger one, but it is improved in a number of respects and its equipment is more complete.

As for the Hudson four-cylinder car, known as the "37," it apparently has served its purpose and has gone the way of all cars; that is to say, it has been discontinued, as stated in Motor World of June 26. But while the big "six" will be the "whole show" for a while, it will not be for very long, for the simple reason that in November it will be joined by a "little six" which now is in process of incubation.

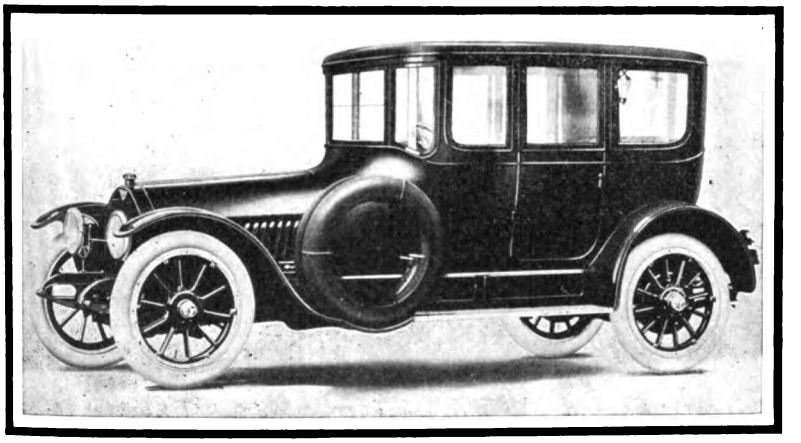
The first thing to attract the eye in the latest Hudson "six" is its very considerable increase in length. From 127 inches the wheelbase has jumped to 135 inches—a difference of 8 inches—and it shows plainly in the machine. For a long car like this, a stiff frame is an absolute necessity, and therefore the frame channels are made 5 inches deep and 2 11/16 inches across the flanges; the material is pressed, heat-treated steel.

Probably the next change to make itself manifest to one familiar with the older car would be the change from right steer and control to left steer and center control. And not only has the gear lever changed its place, but that which it controls has been redesigned, for the gearset, which formerly provided for three speeds with direct drive on third or top speed, now gives four speeds, with direct drive on third, the fourth being an overstep for higher speed than is advisable under average give-and-take road conditions.

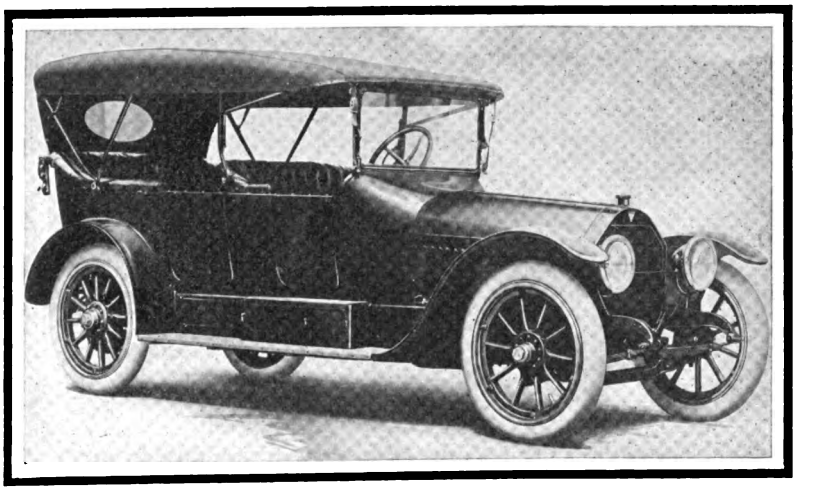
Not a little has been added to the attractiveness of the new "six" by a slight change in the shape of the hood. Where the hood lines were perfectly straight in the older models, they now have a slight though distinct forward inclination, the result being a slight tapering that is not only good to look at, but stamps the car as being right up to date in the matter of automobile body styles; for the gently tapering hood is quite the proper thing abroad and its real attractiveness just is beginning to appeal to the public on this side of the water. This type of hood outline lends itself particularly well to six-cylinder machines, with their long hoods, the taper very materially modifying the impression of length.

In the matter of fittings and equipment, as in the case of the car itself, whatever changes have been made have been dictated by a spirit of generosity, for nothing formerly supplied is lacking, while sundry items have been added and most of the things have been more or less bettered in some way or other. For instance, the motor driven horn, which formerly was listetd as an extra at an extra price, now is included in standard equipment. A folding steel trunk rack is permanently attached to the rear of the car. The tool kit has been made uncommonly comprehensive and is neatly packed in a canvas carrying case. The speedometer drive is taken from a gear, integral with the left front wheel spindle, and is concealed and encased. The cleanness of the car, as a whole, has been enhanced by the abolition of the side-lights, the big 12-inch parabolic headlights having a dimming attachment which makes them suitable for urban work and renders special side lamps an unnecessary equipment.

In the main the motor is unchanged. The cylinders are cast in two blocks of three; the bore is 4⅛ inches as against a long stroke of 5¼ inches. The crankshaft, which



HUDSON "SIX 54" SEDAN, SHOWING THE TAPERING HOOD



HUDSON SEVEN-PASSENGER TOURING CAR WITH 135-INCH WHEELBASE

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is of special design and runs with very little vibration, has three bearings varying in diameter from 2 inches at the front to 2¼ inches at the rear or flywheel end bearing. Valves are of nickel steel, 2 inches greatest diameter, with 1¼ inches clear opening, and are actuated by a single camshaft. The timing gears are helically cut to ensure quiet running. Lubrication is effected by the usual pump circulating system, with constant level splash for cylinders and pistons. The Delco ignition system is employed, in connection with the Delco lighting and starting system, as in the past.

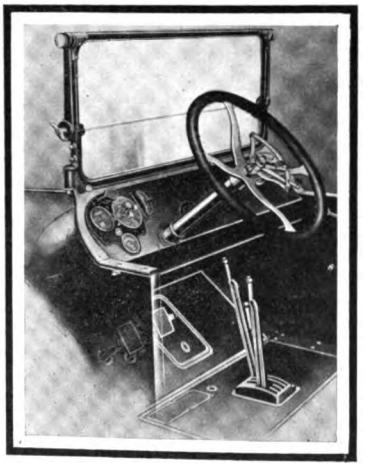
Enclosed in the flywheel, the clutch is made up of stamped steel disks with cork inserts; the disks are 11 inches in diameter. A bore cut in the end of the crankshaft serves as a housing for the clutch spring, the pressure of which is transmitted to the clutch drum through a ball thrust bearing. Small springs insure the proper separation of the disks when the clutch spring is released. The clutch runs in a mixture of half oil and half kerosene, which has been found to answer its purpose admirably.

The gearset, which is new, as already has been stated, in that it provides four speeds and has direct drive on third, is bolted up to the motor crankcase by means of a yoke which passes around the flywheel but does not enclose it. The short, stiff gear shafts run in roller bearings which are mounted in malleable iron cages, so that they are well secured against working loose and are quickly and easily removed in case of necessity. While all the gears and their bearings run constantly in oil, adequate provision has been made against the leakage of the lubricant. A good, big try-cock at the side of the gearcase provides a means of ascertaining the oil level, and a large filler opening on top permits the addition of lubricant when needed.

The full-floating rear axle is built with a pressed steel casing of stiff construction and is fitted throughout with roller bearings, including the driving pinion, which has two such bearings. Means are provided for determining the meshing of the pinion teeth with those of the large bevel gear, and also for making adjustment between the pinion and the gear in case such a step should be necessary. The brake drums on the rear wheels are 16 inches in diameter and 2¼ inches' face, and carry both brakes in the usual way, the foot or service brakes being the externals in the usual way, the foot or service brakes being the externals and the emergency brakes the internals.

Wheels are of the artillery type in regular equipment, though, as in the older car, wire wheels will be fitted at an extra cost. The wheels are fitted with 36 x 4½-inch tires on demountable rims, which take either clincher or straight side tires. The extra charge for wire wheels, which is $80, includes five wheels.

Long and flexible semi-elliptic springs are fitted in front and three-quarter elliptics in the rear. The front springs and the lower members of the rear springs are almost flat in order to eliminate as much as possible the jerky action of springs that are exceedingly curved. The front springs are 39 inches long and the rear springs 54 inches long. In assembling the leaves, which, incidentally, are tongued together to prevent lateral displacement, graphite grease is placed between the leaves to give easy action, and all the spring eyes are bronze bushed, fitted with hardened steel fitted



HUDSON "SIX" DASHBOARD

bolts and lubricated by means of grease cups.

A 19-inch walnut-rimmed wheel controls the worm-and-gear steering mechanism, which can be adjusted for wear by giving the full-circle gear a quarter turn and bringing a fresh section into mesh with the hardened steer worm. Soft grease is packed into the steering gear case, a dustproof grease cup on the top of the case permitting filling when necessary.

The gasolene tank is placed high up under the deep cowl, where it occupies space that is of no other use and affords a very good head of fuel for feeding to the carburetter. No matter how steep an ascent may be, the carburetter is sure to be well supplied with gasolene. Two partitions prevent the straining of the tank and the dash structure by swashing of the 21 gallons the tank will hold. A gauge shows at all times the quantity of fuel in the tank. A sediment cup is provided in the bottom of the tank, as well as a separator and a shut-off cock in the gasolene line.

Beginning with the Delco starting, lighting and ignition system, and ending with the ubiquitous tire-repair outfit, the equipment of the car leaves little to be desired and renders the machine really ready for the road. Anyone who cannot get along for some time, at least, with the regular equipment of the Hudson must be hard to please.

When a Car is a Two-Horse Wagon.

Automobiles have been classified as various things for various purposes, and now for peddlers' purposes, in Ohio, at least, an automobile is a two-horse wagon; it doesn't make any difference whether it's a one- or a 50-horsepower car, it's a two-horse wagon, according to the ruling of Attorney General Timothy S. Hogan.

In the statutes, the attorney found that peddlers going on foot must pay a license of $12 a year to the county; if he rides a horse or travels about in a one-horse wagon, he must pay $20; if he goes in a two-horse wagon, the fee is $28; if in a boat or railroad car, $60. But what if he goes in an automobile? There is not a word in the statute providing for peddlers with automobiles.

Mr. Hogan reasoned that as the statutes governing peddlers' license had been enacted before the advent of the automobile and as the automobile now is a general means of conveyance, the peddler should be allowed to use a machine, but that he should also pay a tax. He therefore decided that an automobile comes the nearest to being a two-horse wagon and that the peddler using automobiles should pay a license of $28.

Minnesota College Has Automobile Course.

To afford efficient instruction in automobile operation and repairing, the University of Minnesota, located in Minneapolis, has decided to offer a course in automobile instruction; this is designed to be more comprehensive than the instruction given in chauffeurs' schools and is divided into three grades. The amount of instruction is of three degrees in quantity, and the tuitions are $5, $7.50 and $10. Business courses, too, are being added.

Chicago Garagemen Hold a Picnic.

Five hundred persons attended an outing held last week at Cedar Lake by the Chicago Garage Owners' Association and the Chicago Section of the Electric Vehicle Association; the customary schedule of picnic sports afforded amusement and $1,000 in prizes was given. The affair was managed by Homer E. Niesz, Harry M. Fowler and George H. Jones.

Smoothing Up an Old Steering Wheel.

An old wood-rimmed wheel occasionally becomes so rough as to be galling to bare hands. An application of coarse sandpaper followed by a fine grade, is the remedy.

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SMOKE—AND THE SALES THAT MIGHT HAVE BEEN

The Sales Manager Discovers Reilly's "Snipe Morgue" and Learns the Dealer's Views on Making Smoking Offensive—The Cigarette Smoker and the Gum Chewer, Too, Are Not Overlooked.

That a man is never too old to learn something and that he can be of inestimable value to himself if he will but recognize the fact that a great many people can do a great many things better than he can was a favorite doctrine with the Sales Manager—and Reilly, too, for that matter—and the Sales Manager often remarked that nearly every time he encountered his busiest dealer he discovered something he hadn't known before; sometimes it was a twist in selling cars and sometimes it was something new about Reilly himself.

Sales Manager Receives Mental Shock.

On this particular day, when he ran down to Reilly's salesrooms he didn't have in mind the discovery of anything new or startling, but he hadn't been there long before he received one of the greatest shocks he had received in some time; he didn't know whether to laugh or gasp in astonishment.

It happened just as a stranger appeared in the salesroom door and Reilly started to meet him. Reilly had progressed about seven-eighths of an inch on a beautiful specimen of the cigarmaker's craft and, as he rose from his chair, he lifted the cover of a little box on his desk, put his cigar in the box, dropped the cover and hurried out of the office.

Preventive of "Dead Cigar" Odors.

Reilly heard the Sales Manager's "What the——," but the remainder was lost to the dealer, who by that time had met the stranger in the center of the salesroom floor. The Sales Manager stared through the glass office windows at the dealer, shifted his gaze to the box and alternated thus for several seconds. Then he walked to Reilly's desk and cautiously opened the box.

"Well, what do you know about that?" And he slowly shook his head in hopelessness at the humorous wonderfulness of Reilly's invention. What he saw was an ordinary cigar box, covered with a coat of black paint on the outside, while the interior contained a little metal dish in which reposed the cigar with a slight line of smoke curling upward. Everything else was perfectly regular, except that the cover had been made to fit tight and on its under side carried a slug of iron which, when the cover was down, held it tightly in place.

The Sales Manager was still muttering to himself, "Crazy! Crazy, sure as you're a foot high!" when Reilly came back. Reilly tried not to smile as he opened the box, took out the cigar and, it not having entirely expired, puffed it back to full and vigorous life. To the Sales Manager he said nothing—just looked.



REILLY HEARD THE SALES MANAGER'S "WHAT THE ——!" BUT LOST THE REST

"Reilly," began the factory man reprovingly, "you're thirty-five if you're a day, but, tell me, honestly, are you getting childish? What's that—that—thing?" And he pointed an incriminating finger at the box.

"Snipe morgue," said Reilly.

"Snipe morgue, hey! Well, you're hopeless. I guess we'd better get a sane dealer before our business here runs down and out."

"The dealer chuckled, and Nellie, in her little office adjoining, watched out of the tail of her eye and smiled.

Reilly Gives Explanation of Device.

"What's the idea, anyway?" asked the Sales Manager.

"Cheer up, Jim, it's only here on trial; maybe I won't keep it," said Reilly.

"What's it for?"

"It'll explain," began Reilly, with a gesture toward the box. "You are sitting here smoking a good cigar. A man appears in the door. You don't want to walk up to him puffing a cigar, neither do you want to throw it away; if you leave it around and it dies the odor is something awful. What to do then? The box is the answer. You put the cigar in the box where it's out of the way and shut up tight and it bothers no one. When you come back you light up again—and there you are!"

"Some idea, that; the idea isn't so bad, but the darned thing looks funny. I never saw one before."

Offensive Smoking Heavy Handicap.

"Neither did I," rejoined Reilly, "but it seems to work all right. Mind you," he added with emphasis, "I'm not advertising this thing. It looks so freakish that I'd hesitate to tell my friends I have it."

"Well, it wouldn't do some salesmen any harm if they got a few hints on this smoking business," replied the Sales Manager.

"That's no lie; making smoking offensive to other people is one of the handicaps of too many salesmen. I certainly like to smoke and I've always tried not to offend people with my smoking, and this box is the finishing touch. I used to throw my half-smoked cigars away and the box idea is partly to save them. Why, do you know, the good cigars I've thrown away was one of the leaks in my business.

Troubles Which Reilly Encountered.

"I know that many people object to smoke, and if I've left a snipe around and they stay longer than I thought they would, or if they get into the office when I thought they would stay in the salesroom, it makes me nervous; I'm watching every minute to see if they aren't sniffing around to see where that snipe is. I felt pompous years ago when I started in business and thought it was the sign of a business man to smoke, even when I was talking to customers, even——"

"That's foolishness!" interrupted the Sales Manager.

"I know it is—now; but it took me several months to learn it. I will never forget how I learned my lesson. I had been selling cars for at least a year, and if I had been as observant then on the question as I am now. I suppose I would have tum-

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bled before I was rudely pushed. But one day I had a man and his wife on the salesroom floor and all the time I was talking with them I hung on to my cigar. Occasionally I put it in my mouth. I never noticed that the woman fanned the smoke away from her face once in a while and that she moved around to get where it wouldn't drift her way, and even when she said she didn't feel well and would have to go home, I didn't realize what was the matter."

"How did you find out?"

Where a Cigar Postponed Good Sale.

"Well, the next day her husband wrote me a letter and told me. He said they had every intention of buying a car and probably would have done so if his wife had had the physical fortitude to stand my cigar until he got around to sign a contract, but that they since had decided to postpone buying for a time. I could have dropped through the floor, I felt that cheap and insignificant. I tried to land him after that, but never got him to the point where I had him that day. It seems that, while he smokes, the smoke makes his wife sick and when he smokes at home he does it in his den or where it won't annoy his wife.

"After that I used to lay the cigar down in the office when I saw anyone come in, but sometimes that wasn't satisfactory. If a man came into the office to sign a contract or for anything else, the cigar generally had died by that time and smelled as loud as 'dead ones' usually smell. So next I began to throw them away when I saw anyone coming in, and have been doing so ever since until now. Hang it, Jim," said Reilly, turning to look at the box, "I believe this is a great scheme, after all."

Prospect Entitled to Consideration.

"It certainly is better than what you will encounter in many of the salesrooms in town," supplemented the sales official. "You can't be too considerate of your prospects; a little thing like that is quite enough to kill a sale, provided the prospect is of a type to be offended by smoke. There are men who would turn around and walk out if you went out on the floor to meet them with a cigar in your hand, while cigarettes are so offensive to so many people that any man who carries one around a salesroom deserves to lose his job, even if he doesn't.

"Whenever I go into another man's office I always drop my cigar. I went to a doctor's office one day, not to sell him anything, either, and I forgot to drop my smoke. After I got into the waiting room I couldn't find a place to drop it and, seeing that there was but one other person there and he a man I hung onto it. But before I got to the private office to see the 'doc' three women came in and when I went out the doctor asked me not to close the door. I don't think that visit did me a bit of good."

"It's different if you know the man you're talking to," asserted the dealer. "When you come in I know it's all right to smoke, and there are lots of my customers who don't notice whether I'm smoking or not; they generally are themselves. But when a man appears whom I don't know and he isn't making a cloud himself, I keep on the safe side. And if it's a woman, I always—well, at present I use the snipe morgue.

"I know salesmen right here in town who will walk out onto the salesroom floor to meet a woman and keep a cigarette in operation at the same time. I know one well-known woman here in town who had quite an experience one spring trying to



"I REFUSE TO HAVE IT THROWN AWAY. I PAID FOR IT," SAID NELLIE

buy a car, and she said a thing that impressed her much was the lack of consideration smoking salesmen seemed to have for other people. She doesn't mind smoke, but she does detest cigarettes, and I guess she was mad enough to have punched one would-be salesman who smoked a cigarette and never even tipped his hat when she went into his salesroom. Moreover, he kept it on all the time he was talking to her.

Arraigns the "Smelly" Cigarette.

"She said she could have survived his keeping his hat on, for oftentimes a man may think interior weather conditions justify wearing a lid in the house, but she said that the ordinary breed of Turkish cigarette is too much for her."

"The cigarette is almost as bad as going around with your breath smelling like a gin mill," suggested the Sales Manager.

"I don't know but it's worse," replied Reilly.

"I suppose it all depends on how you look at it, but a man who can't weather a working day without a drink is sadly lacking in something or other," answered the manager of sales. "It makes me so darned disgusted, to meet one of our salesmen, or any other salesman, or any business man during business hours, for that matter, and get that unmistakable whiff every time he gets near me. I don't mind a drink, myself, now and then, but I do try to avoid such things during business hours."

Meck's Practice With Drinking Men.

"The practice which is followed by Tom Meck is good," added Reilly. "He's one of the best mixers I know of, and he gets along in fine style with everyone, drinkers, non-drinkers and everyone else. He always finds some way to slip in a glass of mineral water when everyone else is drinking highballs and he stands just as well, too. No man thinks the less of another man if he declines a drink, especially when the man who declines is known to be donig so with good reason. Meck's favorite explanation is that he has to see someone in a short time and that he wants to be sure to make a good impression. Generally he's telling the truth, too, when he says it, for he's always just going to see somebody."

"Also, deliver me from the gum-chewer!" exclaimed the Sales Manager, throwing up both hands. "Salesmen who condescend to refrain from smoking often go the limit in the other direction and try to talk car with a mouth full of gum. They can't enunciate distinctly and I'd like to know who wants to converse with a man whose lower jaw is flopping up and down and clicking away between words. I suppose gum chewing is all right in this day and generation, but it gets me."

"Snipe Morgue" Is Discarded—Almost.

"That, like many other things, is all right in its place; but that isn't on the salesroom floor," replied Reilly. "And say, Jim," he added, "I'm going to throw this freak box away. Everybody'll think I'm bugs."

"No, they won't; keep it," urged the factory man.

"I refuse to have it thrown away; didn't I pay for it?" said Nellie, who walked in and laid a pile of letters on Reilly's desk.

"How's that?" asked the Sales Manager.

Reilly smiled sheepishly as she explained: "He left a dead cigar on the desk the other day, and it got so bad I threw it away and left ten cents in its place. He took the ten cents and bought the box."

"Ah, hah! A woman in the case!" exclaimed the Sales Manager.

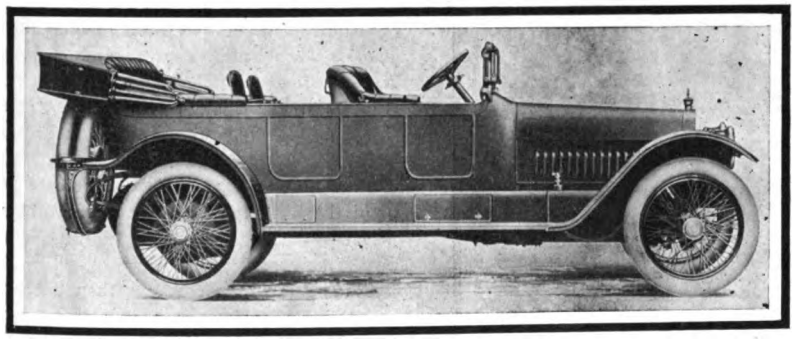
"Yes—Cherchez la femme—always," was Reilly's meditative response. "Which, according to Hoyle, means, 'Hunt the dame,' when all other explanations fail."

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LEFT SIDE STEERING ON LATEST STEARNS-KNIGHTS

Center Control Goes with it—Slight Changes in Body Lines do not Affect Individuality, but Add Considerably to Beauty.

There is an indefinable something in the appearance of a car of well-established design that invariably stamps it as the product of its maker, regardless of such minor changes as may be wrought from time to time either to keep abreast of the popular conception of what a car should look like or to help in forming that conception. Just as a man has an individuality of appearance that is independent of his features and shows through changes in his garb, so a car designed by a strong mind has an individuality that survives modifications in body form and is independent of distinctive radiator or hood outlines. And so it is that the latest series of Stearns-Knight cars, the details of which just have been made known by the F. B. Stearns Co., of Cleveland, Ohio, shows the familiar Stearns earmarks, though there have been made some changes that were considered advisable from the dual standpoint of beauty and utility.



STEARNS-KNIGHT SEVEN-PASSENGER "SIX" WITH WIRE WHEELS

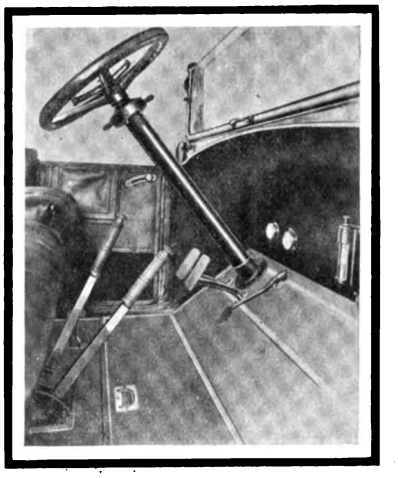
First to catch the casual eye is the change in the shape of the hood and cowl, and the significant shifting of the steering wheel from the right to the left side with the natural accompaniment of centrally placed control levers. The former parallel lines of the hood have given way to a slight but distinct and most becoming taper which merges easily into the flare of the cowl, eliminating the angle that heretofore has existed between hood and dashboard. Slight though the change is, it has a curiously marked effect on the car as a whole, giving to it an appearance of unity and of clean, unbroken lines that was not possible with the older angular interruption. The cowl is a trifle less conspicuous than it was and is decidedly pleasing to the eye from any angle of view.

The change to left steer is a natural and easy one, and in making it the Stearns company finds itself with many distinguished confreres. At the same time, there has been an improvement in the arrangement of the spark and throttle levers which, formerly placed in the conventional position on the top of the steering wheel, have been relocated under the wheel and now are each but an inch long. The neat little casing which encloses the lever connections also accommodates the pull-and-push buttons controlling the electric lights. The ignition switch, carburetter adjustment and electric horn button also are carried on the steering wheel column, thus centralizing the most needed controls. The electric motor starter is operated by a pedal.

As in preceding models, the six-cylinder chassis has a four-speed gearset and the four-cylinder chassis three speeds, both selectively operated. The larger car retains the unit power plant system, and while the smaller maintains the separation of the engine and the gearset, the latter has been moved from its former position on the rear axle to a point near the middle of the car. In neither case is the Stearns rear axle construction changed, the solid forged casing of enormous strength and stiffness being continued. In the construction of this axle casing the huge forging is split in the middle to accommodate the driving bevels and the differential, while the arms are bored through for the passage of the driving shafts.

Changes of less conspicuousness, but still of importance in their own ways, include the placing of the tool boxes under the body, with hinged covers just over the running boards and below the front seats; the adoption of folding seats of the arm-chair type for auxiliaries in all seven-passenger models; the substitution of pantasote for silk mohair as a top material and the adoption of a quickly and easily operated style of top; the optional fitting of wire wheels, at a slight extra cost; and the elimination of the bulb horn in favor of the motor-driven signal.

In the sleeve-valve motors practically no changes have been found advisable. The four-cylinder motor has the same bore and stroke—4¼ x 5½ inches—and the "six" also retains its cylinder measurements of 4¼ x 5¾ inches. While the nominal rating of the two motors is given as 28.9 and 43.3 horsepower for the "four" and "six," respectively, the makers state that these figures are merely nominal and that the motors can be guaranteed to exceed them by 50 per cent. The lubrication system is of the movable trough type; the troughs into which the connecting rod ends dip at each revolution are connected with the throttle lever, so that the amount of oil splashed is increased and decreased with increases and decreases of motor speed. The multiple jet carburetter for the four-cylinder motor and the expanding type for the "six" are practically unchanged, as is also the dual ignition system with a single set of plugs and high-tension magneto that is common to both.



STEARNS-KNIGHT CONTROL

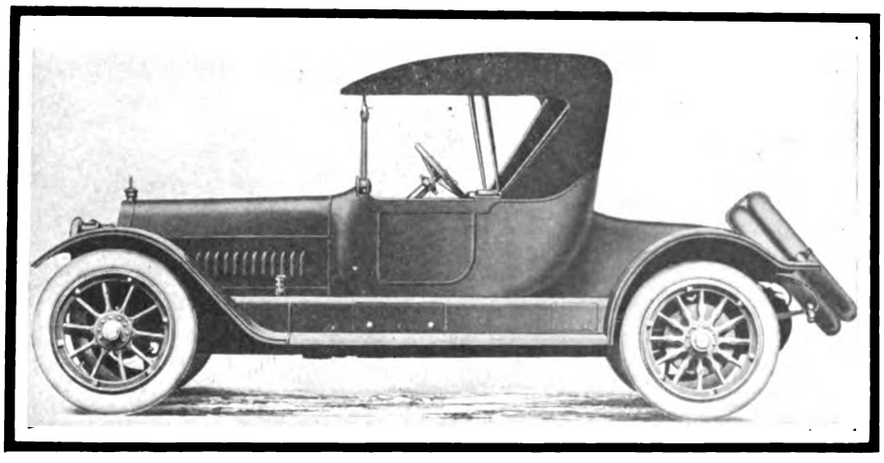
While but two chassis models are built, as in the preceding series, each chassis is made in two wheelbase lengths, which virtually expands the line to four chassis models. The six-cylinder model wheelbase lengths are 134 and 140 inches, and those of the four-cylinder model 121 and 127 inches. The 116-inch wheelbase for the "four" has been discontinued. Each chassis may be had fitted as three-passenger roadster, four-, five-, six- or seven-passenger touring car, limousine, landaulet, coupe or sedan—a truly imposing category of body types. The coupe and sedan are newly designed throughout, and were not previously listed by the Stearns company, while the other models are developments of previous types. There will be no difficulty in agreeing with the manufacturers that the line is an un-

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usually comprehensive one, including machines adapted to practically any class of service, whether urban, suburban or cross-country.

The provision made for the comfort of passengers is ample and effective. The spring system includes semi-elliptics in front and three-quarter elliptics in the rear, with rubber bumpers. It goes without saying that tires are large. In the four-cylinder models they are 36 x 4½, except in the seven-passenger models and the heavy closed cars, in which they are 37 x 5 in the rear and 36 x 4½ front. In the "sixes" all tires are 37 x 5.

Always believing in the extreme of completeness in equipment, the Stearns people have adhered to their principle and have even gone a little further than in the past. Regular equipment includes electric lighting and starting system, the illuminating



STEARNS-KNIGHT SIX-CYLINDER THREE-PASSENGER ROADSTER

department covering head lights, side lights, tail light, dash lamps, auxiliary trouble lamp and tonneau light in the five- and seven-passenger models and, of course, interior lights in the closed cars; top, side curtains, slip cover, built-in windshield, speedometer, electric motor horn, two extra quick-detachable rims, tire carriers, auxiliary gasolene tank, ventilator door hooks and the usual tools, etc., in the new tool boxes. In addition, the enclosed cars have speaking tube, dome light, clock, toilet set, card case, notebook, flower vase, etc., and of course all models have the regular equipment of robe rails, footrests and the like.

Light Cars and Loose Nuts and Bolts.

A fact that owners of lights cars should bear in mind—and act upon—is that in a light machine vibration is more effective in loosening nuts, bolts, screws and so on than in a heavy car. This means, of course, that such things should be given no opportunity to get loose, but should be well taken care of with lock washers, split-pins and other trouble preventers.

TIME—THE ASSET WHICH IS MOST VALUABLE POSSESSION

Without it All Other Capital Avails Nothing—Big Corporation Advises its Salesmen to Conserve it Most Studiously.

"If time was money I'd be a millionaire," the ragtime "fans" used to sing; they were quite right, and the principal difference between the ragtime singer and the average millionaire is that the latter turned his time into money while the "ragger" didn't. But each had just as much time as the other, not one whit more or less.

Time is every man's capital, or, at least, is one of his greatest assets; in fact, it is his one greatest asset, for if he had no time all the money capital he might have would be of no avail. Also, time is an asset which is wasted more than probably any other, and the value of this fleeting commodity is emphasized by the National Cash Register Co. in a talk to its salesmen.

"Your greatest asset is time. Everything else is furnished you. Opportunities, goods, advertising, and cooperation cost you nothing. They are free," is the opening of the admonition. "But time is what you buy and pay for. It is the stuff that turns opportunities, goods, advertising and cooperation into money.

"Seconds, minutes and hours of the working day mean dollars to you. You can reap the full valuation, or you can throw away your time and dollars. The result is success or failure. Good days and bad days are merely flights of your imagination. Every day is a good day if you make it so. Every day is a bad day if you dissipate your time.

"Some wise man said: 'Each day is a life.' Days are measured by time. Your life and your success are measured by the use you make of your time. Another wise man said: 'Another day, another life.' Each day is your day. To-day may be your biggest day—who knows—but you? Make the most of it. Arise each morning and be glad to join the others who know and understand the value of time.

"Now is the only time you can. Yesterday is past. We live only in to-days.

"Nothing wastes time like miscalculation. It is the parent of incompletenes and the great author of lost sales and poor business. Calculate your time carefully. Do not let your victories of yesterday make you feel too sure of to-day. Instead, let them be a stepping stone to new heights of efficiency.

"Every hour you waste causes a certain amount of money to leak out of your pocket. Every time you slow down you choke your income. Think of the wasted time between the completion of some sales and the bringing of a new prospect. Think of the time wasted in getting started some months. Think of the money these time wastes represent.

"Time is the most valuable thing in the world. Every minute or every hour wasted can never be recalled. Two things, spent time and the spoken word, never return. Time speeds by, and unless it is used to advantage, it is lost forever.

"Make use of your time. Increase your capital by taking advantage of your greatest asset—time."

Racing the Motor Worse than Useless.

While there is reason in abundance for running a motor, without load, at reasonably high speed for the purpose of making carburetter adjustments and the like, there is no excuse for "opening her up wide" and letting "her" turn up to the last limit of speed. Under no conceivable practical conditions could the motor run in such a way in service, and there is little sense in forcing a motor to do things that are absolutely useless, merely for the purpose of making a fearful noise—which is the most obvious result. Further, excessive racing must be productive of a certain amount of wear and tear and no small unnecessary strain due to the tremendous centrifugal force exerted by the rotating parts, and it is to the interest of the car to avoid whatever is unnecessary of this sort. Tuning a carburetter so that it will carry the motor at 3,000 revolutions per minute when it can't pull the car when running over 1,700 revolutions is nothing short of foolishness, though it often goes to the extent of being a nuisance.

To Make Thick Oil Flow Freely.

Oil that is rather thick can be made to run freely into narrow crevices by putting the oil-can on the exhaust pipe and thoroughly heating it. Cylinder oil thins when heated less than most other oils.

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THE ROAD MAN THE WEAKEST LINK IN THE CHAIN

Wherein His Work Differs From Traveling Salesmen in Other Fields—Golden Opportunities That Are Wasted—His Weaknesses and Specific Remedies That He Himself Can Apply.

By GEORGE M. DICKSON, General Manager National Motor Vehicle Co.

Older lines of business grew to their positions through the use of the man on the road. The automobile business jumped to its magnitude, due to its unique conditions, without the aid of the road man. Now to hold its position and magnitude, the automobile business begins to grow systematic and the road man takes his place as a part of this selling system.

Road Man Is a Sort of Salesman.

As a result, the automobile road man is a kind of travelling salesman, and his work offers a golden opportunity. His methods and his possibilities are as yet imperfect.

Let us take the dry goods business and see what we have; there have been men on the road for years and years in the dry goods business. They have inherited the principles, methods and policies of the men before them. They can measure their results by experience. They have regular routes, as their places of business are practically all established and are known quantities. The men to whom they sell their goods have for the most part been in business for years and years, and these buyers know how and when to buy.

Not so with the conditions that surround the automobile road man. There is but little experience to mark the way. The motor car man-on-the-road must create new business, besides calling upon the trade that is trying to become staple day by day.

Duties Which Fall to the Road Man.

The man who buys of the automobile road man has not been taught how to buy like the dry goods dealer. The automobile road man has not such defined routes, and not such regular customers as the dry goods travelling man.

While the purpose of both the automobile and the dry goods road man is to represent his factory in the "field," the work of the two men is different, due to these conditions roughly outlined. The automobile road man calls upon new customers continually; the personnel of the automobile business has been changing rapidly. The automobile road man must hunt out and establish new dealers, while it is often true that the dry goods road man must hustle to call upon regular customers in his allotted time.

The automobile road man's duties briefly and generally stated, consist of calling upon present customers; creating new dealers; helping the new and old dealers sell cars; studying the conditions in the "field" and keeping the factory advised; assisting the dealers to perfect their service- systems; listening to complaints of both dealers and private owners and helping to remedy faults; "drumming up" prospects for the dealers; helping the dealer to close sales; and in general be a traveling miniature sales force of the factory.

Own Resources Essential to Advance.

The road man to do his best work should imagine that he has his desk in the factory offices and not get into the habit of thinking that he is a thing apart from the home office. The initiative and creative possibilities of the road man's position depends largely upon his own resources and sense of obligation. There are few road men with such opportunities to "soldier" on the job as the automobile road men have, if they do not care about the future.

Automobile road men, many of them, have been associated at one time with large garages or dealers, or branch houses in cities. As a result, they hesitate to leave the large towns. The fertile field today is in the small towns, away from the easy hotel chairs and bright lights of the cities. The dry goods road man makes every small town; the automobile road man must make every small town henceforth.

Must Win Prestige for and by Himself.

I believe that the average automobile dealer is well educated how to get customers, how to sell them, and how to take care of them after they buy. I believe that automobile factories have learned the lesson of building what the people want, at the price they want it. I believe that the public is educated how to buy—how to judge a motor car, what to expect of it, and how to take care of it. The man who is behind the times in this whole scheme of builder, dealer and consumer is the road man.

This is not altogether his fault. He has been put into a peculiar position. He must to a large degree work out his own salvatiton and win for himself and his fraternity the respect and confidence of both builders and dealers. If the road man is to be a permanent, important, trusted and high-salaried factor in the business of selling automobiles he must win such prestige for himself; he must acquire by producing results the position in the trade that makes him indispensable.

Suggestions for Road Man and Dealer.

I have had road men write to me from the "field" telling me of their experiences, defeats, successes, ideas for improvement and suggestions that are constructive. From these reports from road men, and the observations of the force at the home factory, I have made the following suggestions that are calculated to help all road men and the dealer as well:

1. The road man, in order to make headway, may make promises he cannot keep. This, one of our road men writes me, is what he has observed has been a fatal mistake of some of his competitors. The road man's promises misrepresent either the actual intrinsic worth of the car he sells, or misrepresent the extent of the co-operative service the factory will render. This permits the road man to make an immediate "showing" back at the home office, but it acts as a boomerang in the long run and does more harm than good.

Price Cutting Not Real Salesmanship.

2. It is not "selling" cars to give one dealer a greater percent off than is given other dealers. Sometimes a road man may write his home office that if they will only let him give this man a little larger percent discount than the regular prescribed rate, he could close with the dealer. That is not salesmanship. That is only giving something away, and you can give things away by the use of a two-cent stamp, without putting a man on the road at considerable expense who got his job because he claimed to be a salesman.

3. Here is a little thing, but I have often seen it prove important. The road man gets into a town loaded with a list of names of people who have sent the factory in-

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quiries. The factory has no dealer in this town. The road man, if he can create interest in his car among the people who have made inquiries, and if he can sell one or two to these people, he could with ease establish a dealer. The dealer wants to be "shown" that there is a demand in his town for the road man's car. But if this road man takes his list of names and goes to the telephone booth in the hotel and merely calls them up—his answer will be the same and he ought to save his time. He should go and see every person who has sent in an inquiry; talk to that person face to face.

Belittlement of Certain Inquiries.

Unfortunately the road man sometimes belittles such inquiries. Naturally so, when he has taken no interest other than giving the telephone girl a number. Salesmen who can sell automobiles by telephone in a minute's conversation have not yet become a reality, and it is not likely that they ever will.

4. Every locality may differ. The road man must first make an analysis of his locality. Many things can combine to make this or that locality different. The success of some one make of car, or the failure of this or that dealer to play fair with the public, or the temperament of the people, or—well, there are a thousand things that the 100 per cent. good road man will study and not take by faith. For example, in Texas, in a certain territory, a road man wanted to get a certain wealthy man to own a car. If he could sell this man he felt that this man's word, his recommendation, and his example, would influence other sales.

But this certain wealthy man had refused to "fall for" the regular line of salesmanship talk the road man had used in Eastern cities. The road man then retreated and "readjusted his weapons for a different attack." The road man dared the certain wealthy man to go to the factory, many miles away, and drive a car home. If the car, after the trip home, had made good on all the road man's claims, then the certain wealthy man was to buy it. If it did not make good for itself, then the road man was loser.

Selling a Purchaser His Way.

The certain wealthy man was built that way; the proposition made a hit with him — appealed to his fresh-air-sporting make-up. He accepted. He was skeptical. He rode in the car home, and bought it, converted, happy and boosting. His influence will produce easy sales for this road man in the future. The Texas man "was sold" in his own way. That's the point—sell a man **his** way, not **your** way. Make the man think **he** is buying it from you, and not **you** selling it to him.

5. A road man, I believe, should be well posted on all the latest developments, activities, and all things, be they commercial, mechanical, or political, pertaining to the motor car industry and, in fact, to the whole country. The road man should be a constant reader of newspapers and automobile trade papers. He must keep posted, as in the automobile business as nowhere else is the business beginning a new era every day.

Road Man Should Help Dealers.

6. A road man should strive to be a constructive help to the dealer already in business, to aid him in perfecting his selling system; his follow-up system; and his garage service system. The road man could be of great help, because of his accumulated ideas and broad experience. This will help not only the road man, dealer and the factory, but will be a practical benefit to the private owners as a whole.

7. The road man should be so well posted that it would be impossible for a prospect to ask a question that the road man could not answer and tell the whole truth. Often a prospect will ask what seems to be a perfectly foolish and unimportant question. But how often have you noticed that if you are courteous and complete in your answers to the many little questions by so doing you win the prospect's confidence and respect and are able later to prove your big point.

8. The road man should convince the dealers that he was born, trained, put to work and paid for the one and only purpose of being of real, tangible assistance to the dealers.

Advertisements Should Be Studied.

9. The road man should study advertising. He should read every advertisement that comes from his home office and should help to educate the dealers to read and practice advertising. The road man should watch the advertising of competitors, too. It might save him embarrassment, and certainly will add to his general knowledge. To ignore advertisements is either to admit that you are inefficient or that you think you are "too wise" to need to heed the trend of the times. Advertisements are the windows through which you see what is going on inside the industry to a very large degree.

10. The road man can be of great help to his factory back home, by keeping the employer fully advised as to changing conditions.

11. The road man should study his competitors' dealers, and report their success or failures to the home office, in order to keep tabs on the movements of "the enemy."

12. It is useless to add: Don't knock; boost always, work hard, and keep clean habits.

I believe that the road man problem is rapidly working out its own solution, but certainly here is one angle of the selling system that can be improved—and the road men themselves are the ones who can best improve it.

Yawning Opportunities for Salesmen.

"If I only had the opportunity," is the lament of many a salesman, dealer or garageman who probably waits for opportunity to knock at his front door, never dreaming that he might sneak out the back door and find her skulking around in the back yard. That too few men know opportunity when it appears is the statement made by the National Cash Register Co. in a talk to its salesmen.

"The trouble is, you don't know Opportunity by sight. You are expecting her to soar down from some mysterious perch and place a purring chance in your lap," it says. "You are letting your fatalism get the better of your common sense. You are standing on a rock in a fresh-water lake and waiting for 'the tide in the affairs of men.'

"Opportunity is a tangible, ever-present thing. It is many things. It comes to you at your office in your morning's mail. It is personified, perhaps, in the man who is sitting on the bench outside your door. It beckons to you from the farm, stalks at your side as you ply your trade, winks up at you from the whirring wheels of your factory machines. It is at your elbow and under your thumb, in your home and a thousand miles away.

Things That Suggest Opportunities.

"The conversation at your dinner table to-night may suggest a chance that you can take. Your Sunday afternoon walk may disclose an opening for which you have been waiting all these years. The business appointment you have to-morrow morning may hold for you more than you now believe. That article you just read might turn your life from failure to success. That advertisement you just passed by may be the keystone in some other man's triumphal arch.

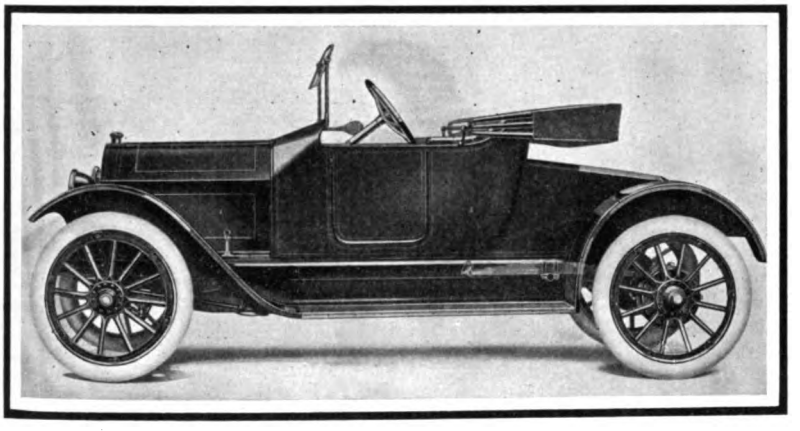
"Opportunity comes in strange guises, at strange times. It seeks and is sought. It may be close at hand; possibly a distance away. Where it is depends on you—upon your bump of introspection and perception. Of one thing you may be sure—there is a chance open somewhere that you can take—but you will have to know Opportunity by sight before you can expect to spill salt on its tail."

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MORE KICK IN KING MOTOR AND BETTER DETAIL WORK

Higher Compression and Bigger Bore Factors in Power Increase—Motors Now Built "at Home"—Spring System Unchanged.

The time to make changes and improvements in cars—that is, provided the changes and improvements are worth while—is just as soon as possible, regardless of such considerations as those concerning yearly models and the like. If a new idea is a good idea, it cannot be incorporated in the car any too soon. At least, this is the point of view of an ever increasing number of manufacturers, and it is the point of view of the King Motor Car Co., of Detroit, which hereafter will make changes and improvements just when they are required, regardless of seasons or times.



KING ROADSTER, SHOWING CANTILEVER REAR SPRING

It would appear, however, from the specifications of the very latest thing in Kings that there is not much danger of that machine becoming unrecognizable for some time to come through alterations, for having found out most of the things they wanted to know about the best way to build their own particular car, the King people are going ahead and building it accordingly, with changes so slight that only an expert in Kings would be able to detect the variations without assisance. A little more power, a little change in the design of the engine, and an increase in the efficiency of the cooling system that is a little more than commensurate with the increase in horsepower—barring these things the machine stands as it stood in the models that preceded the latest, which is designated as Model B.

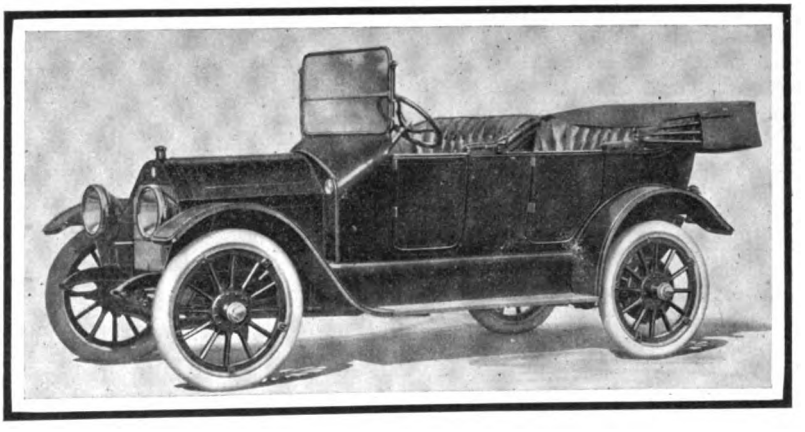
The increase in the power of the motor has been brought about by the increase of the bore from 3¾ inches to 3⅞ inches, the stroke remaining at 5 inches, and by raising the compression approximately 15 pounds. Instead of being cast in pairs, the cylinders now are cast en bloc. The motor now is built wholly in the King factory, with the exception of making the castings, the plant equipment having been augmented to permit this additional work to be done at home, so to speak.

The motor is combined with the gearset to form a unit power plant which is carried on a three-point suspension, the single point, as usual, being at the front. Cooling is by thermo-siphon system, a six-bladed fan of particularly careful design serving to maintain a good blast of air. By increasing the capacity of the water system as a whole—making both jackets and pipes of more ample dimensions than formerly—the cooling effect is increased, the movement of the water rendered easier and the filling intervals made longer.

The motor is of the L-head type, with valve stems and springs enclosed; rollers on the valve lifters ensure long life and minimize friction at these points. Lubrication is by constant level dam system, which takes care of the cylinders and pistons by splash, and by forced feed to the three main bearings, there being the usual small rotary pump to maintain the requisite circulation of the lubricant. A dual ignition system is employed, with a single set of plugs, a Briggs magneto taking care of the generation of current when running.

A 12-plate multiple disk clutch, running in oil, the disks being faced with Raybestos, serves as the connecting link between the motor and the gearset. The gears provide three speeds, selectively controlled by a centrally placed lever; the steering wheel is on the left side. The gear shafts are mounted on roller bearings. The propeller shaft runs through a heavy torque tube and has the usual universal joint at the gearbox end; the necessity for radius rods is eliminated by the tube and the distinctive cantilever springs, which take the drive from the rear wheels. The rear axle is of the full-floating type and is of substantial construction, having 1½-inch driving shafts and other parts in proportion; the axle is fitted with Hyatt roller bearings. Considering the fact that the car is of moderate size, the brakes are of ample capacity, the drums being 14 inches in diameter and the bands 2¼ inches wide; both service and emergency brakes are on the same drums, the arrangement being the usual internal expanding and external contracting construction.

The springing system is the especial pride of the King company, and in this there is no change. The rear springs have received the lion's share of attention, for obvious reasons. As is quite well known, they are of the so-called cantilever type, a single semi-elliptic spring on each side being pivoted at its forward end and the middle on the frame of the car, while the rear end is clipped to the rear axle casing. Road shocks are transmitted to these springs at right angles to their length, the result being a shock-absorbing, easy-riding effect that is as agreeably effective as the system



KING MODEL B FIVE-PASSENGER TOURING CAR

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is simple. The front springs are semi-elliptics placed directly under the frame members, to which they are shackled in the usual way.

But one chassis model is built, having a wheelbase of 112 inches, tread of either 56 or 60 inches and 33-inch wheels with 4-inch tires on demountable rims. Two body styles are mounted—a five-passenger touring car and a roadster. The general effect is that of long, straight lines, and the design is noticeably clean. The cowl, which carries the windshield without unsightly stay-rods or other steadying parts that detract from appearance, is carried slightly backward at the top, forming an extra overhang that not only looks well but brings the windshield well to the rear and adds somewhat to the protection of the occupants of the front seat.

Not a little of the credit for placing a surprisingly roomy five-passenger body on a 112-inch wheelbase is due to the rear spring system; it is the claim of the King people that the term "roomy" is applied to their car with all correctness. Both touring and roadster bodies are finished in dark blue, with metal trimmings either nickeled and polished or finished in black, so that there is not an excessive display of glitter. The rear of the roadster body forms a large compartment for carrying "duffle."

The price of the car with standard equipment is, as before, $1,095. Standard equipment includes electric lights, windshield, top with cover and quick detachable side curtains, the customary list of tools, tire repair appliances, etc., tire irons, an extra rim, speedometer and electric horn, the two latter items being additions to former equipment lists. As extra equipment at an extra cost, the Ward Leonard electric starting and lighting system is installed, which brings the price to $1,195.

Prest-O-Lite Denies "Canned Gas Fuel."

Although within the past week the Prest-O-Lite Co., of Indianapolis, has been accredited with being about to market "canned gas" as a fuel for automobile engines, the company, in answer to Motor World's inquiry, states that it has "no definite plans at present regarding acetylene or other gas for fuel." Whether "definite" means that the project has been scarcely thought of or has been given more serious consideration is not apparent. It is not new in automobile circles that gas, even illuminating gas, can be "canned" and used as fuel, but thus far the idea has not been developed to a point of practicability, though numerous experiments, many of them giving promise of large possibilities for the future, have been made with various manufactured and natural gases.

"KNOW WHY YOU FAIL—THEN WIN," ADVICE OF SALESMAN

Man Who Retrieved a Failure Tells How he Did it — First Learned Why he Had not Succeeded, Then Sought the Remedy.

Many a man has failed in something he undertook and has remained a failure without knowing why it was he did not succeed, whereas had he made an analysis of the situation there is a possibility that he might have learned the reason for his failure and, knowing it, have supplemented his failure by success; this applies to automobile salesmanship as well as to any other vocation or business, and one instance of a salesman who failed is cited by a man who now is successful in the car selling field in Cleveland, Ohio.

"Three years ago I started selling automobiles," he said, "and I probably was the biggest failure who ever broke into the business. I had been selling buggies for something like fifteen years and had been one of the best salesmen in the employ of the company—at least, I had headed the list in point of gross sales for the last five years of that time. So when the buggy began to take a rear seat in favor of the automobile and I saw other fellows making small fortunes in commissions in the new field I promptly decided that I would enter it.

"My previous record as a salesman made it easy for me to make a desirable connection, and soon I was on the pay roll of a large automobile sales concern at a fine salary and with a chance to make as much more on commissions if I produced the business. In a few weeks, however, I could see that a nice indigo envelope would be awaiting me at the office if I didn't begin to make sales.

"I had had a bunch of prospects on the string, and in many cases had hunted them down myself; but not in one single instance had I succeeded in closing a sale. Only two of the 15 or more prospects had eventually decided in favor of our car, and these had to be turned over to one of our other men before they were ready to buy.

"Something had to be done in a hurry. I had no idea of going back to selling buggies and acknowledging that I was a failure in the new line. So I set about to find the reason for my failure and likewise the remedy.

"Finally I hit upon it. I had been in the buggy field for a long time, and knew buggies from A to Z. I knew how they were made, and what they were made of, and what they should be made of to insure satisfactory service. I knew all the other makes with which we had to compete, and could point out the comparative excellencies of our brand.

"All I knew about automobiles was the little I had been able to pick up from the advertisements our firm was running and from listening to the sales talk of our star salesman. Of course, that was all one sided, and I had learned it without knowing exactly what it means. I had a certain little spiel that I used on every prospect, and it abounded in technicalities of which my knowledge ended when I pronounced them correctly. I said carburetter, for instance, and talked of mixtures without knowing anything more of a carburetter than where it was located.

"I resigned from my position and started in to learn something of the practical side. I took a short course in a garage, under the eye of one of the best mechanical men in the city, and during this time I thought nothing about brands at all. When I had learned to take an automobile apart and put it together again, and had a practical knowledge of the workings of every part of the mechanism, I could see even more plainly than at first the reason for my first failure. I now had ideas about what an automobile ought to be and what it ought to do, and I could give them to an outsider with clearness. I felt competent to advise in regard to what sort of a car would give the greatest satisfaction.

"When I had completed my practical course I went to several of the leading car agencies and let them try to sell me one of their cars. In this way I had a chance to notice their selling talks and to see just what other cars had to offer. Remember, I was a practical automobile man now and they could not put anythnig over on me. After this tour I made another discovery—the most startling of them all—and that was that I didn't want to tie up with the firm with which I had started out originally, for I found out that other cars had it beaten.

"It always had been part of my selling creed that it was necessary to have supreme faith in your goods, or you couldn't sell them; so I proceeded to make a decision as to which was the best all around car in the price range most sought for, and then set out to get the agency for it. I had no trouble in doing this, as I was able to demonstrate my ability, and at last I had a start in automobile selling on even terms with the most capable salesmen in the business.

"Sales were comparatively easy after that. I knew what I was talking about, and I had confidence in my article—two things that I now know are indispensable to selling success."

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GARAGE AS SUCCESSOR TO THE VILLAGE SMITHY

How an Enterprising Young Garageman of Central New York Draws Good Living From Transient Trade—Is a Car Dealer as Well—Methods That Differ Slightly From City Practice But Are Successful.

Under a spreading chestnut tree
The village smithy stands;
The Smith can stand in the door and see
The passing of trade that used to be,
And he wishes he'd given up the darned business a couple of years before and built a garage before "that young feller" started one down the street and got all the business.

When Longfellow eulogized the village blacksmith he probably never suspected that his workaday hero would some day be relegated to a back seat while the center of things mechanical in the country village located itself under the sign "Garage," where a wide-awake young mechanic drew the dollars which the transient trade used to leave with the man of brawn and grimy hands. But such is the case. The old blacksmith shop was well capable of taking care of the troubles of the passing trade and the village trade as well when horse-drawn vehicles were the style, but with the coming of gasolene wagons the smith has been obliged either to become a garageman or to find himself deprived of much business that might otherwise be his.

Village Garage Much Like the Smithy.

To-day, throughout the country, the village garage is just as much a village institution as the old smithy used to be and where the "kids" used to "rubber" in through the door at the flying sparks, they now hang around where they can smell gasolene and get free air to blow up their bicycle tires. Furthermore, the reliable and honest village garageman is making a better living than the blacksmith ever expected to make.

There are many garages of this type; especially is the State with good roads prolific in them. When in Central New York a Motor World man asked a motorist who drives much who was a live country garageman, and the motorist, after a moment of thought, said, "Go to see Newton, in Chittenango," and the advice was followed. To get there the Motor World man traveled 11 miles on a third-rail electric road and rode two miles and a half in an automobile 'bus to the little village of less than 1,000 inhabitants and with no near railroad connection. But it lies on the old Genesee turnpike, an east-and-west State road across New York, and is in a valley which furnishes some of Central New York's most beautiful scenery.

Floyd H. Newton, who operates one of the two garages in the village, is an excellent sample of what a garageman can do in a country village, and his business is conducted with an acumen which might well serve to pull many a big city garage from a profitless rut. Newton is a dealer, as well, and is filling the Chittenango Valley with Fords.

Started Business With Few Assets.

Less than two years ago his principal asset was an unlimited amount of nerve, common sense and a one-cylinder, 2½-horsepower gasolene motor. He got married. Then he borrowed $900, took his gasolene motor under one arm and his bride on the other and set up in business. For this he rented what in successive stages had been a saloon and grocery store in the center of the village, on the State road. The motor he set up in the store barn and since then has added, piece by piece, a drill press, lathe, air compressor, emery wheels and a small dynamo, this constituting the repair-shop equipment. Much in contrast with city conditions, the whole rent is but $15 a month.

Part of the borrowed capital went for furniture, and he proceeded to start housekeeping in the rooms above his store. The remainder went to buy a Ford demonstrator and a few other things, and he opened for business where his predecessors had dispensed booze and groceries. The main or front part of the store is his showroom and contains his stock of accessories and supplies. The rear of the building houses a work bench and vulcanizing equipment.

Getting a Hold on Transient Trade.

A year ago Newton, who is only about 25 years old, was a sub-dealer under the Ford representatives in Syracuse, but this year he is a dealer on his own account. The change apparently has had much to do with his success. Last spring he contracted for 20 Fords, even though the factory hesitated about allowing him so many, but he made good on his contract and to date has sold about 25. A couple of thousand dollars profit isn't so bad for a country dealer, especially when it's not the only profit.

When Newton opened up he realized that his future lay largely in getting a hold on the transient trade, for on Sundays and holidays when the weather is pleasant about 500 cars pass his place between 7 o'clock in the morning and midnight, not counting numerous motorcycles, and many of this number stop and leave from 25 cents up.

To let the public know he was there, Newton erected four signs, four feet square, at various advantageous spots about Chittenango informing the public that he offered "prompt service and right prices." Once the trade began to come he took care of it, and it came back. Many times he has been called 10 and 12 miles out into the country to repair a breakdown, and his reputation is now so well established that those who frequent his locality do not hesitate to call upon him for fear they will get "stung."

A practice he followed at the beginning is still in effect, and that is being reasonable in charges. If all that is required is a carburetter adjustment that requires but a few minutes, he is quite likely to make no charge, and if it is a nut or bolt or some little thing of that description, his charge, when he does charge, seldom falls below 25 cents. Hardly a motorist but is willing to pay a quarter or a half-dollar for a small job, and these small amounts count big on a busy day.

Free Air an Effective Drawing Card.

Realizing the advertising that lies in free air, Newton installed a small tank on wheels, with a hose, in front of the store, and anyone whose tires need inflating is welcome to take all he wants. As an example of the garageman's business and mechanical ability, when he installed his free air wagon, instead of spending a bunch of money for it he bought the various parts, picked them up here and there or had them made, and built the wagon himself. It is about three feet long, a foot and a half in diameter, and holds 150 pounds. He is going to paint a "free air" sign on the wagon, "but," he said, "I don't need to do that, for any man who drives a car can spot that tank as far as he can see it." It always stands in the street in front of his place of business, and even the village

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boys draw on it for filling up their bicycle tires.

Gasolene is an able source of profit. Under the driveway at one side of the garage is a tank which holds 10 barrels—about 500 gallons; and a pipe extends from this to a Wayne pump inside the building near the front door. From the pump a section of gas pipe extends out of the building and across the sidewalk, with a hose running down to the street. Gasolene is bought at 18 cents and retailed at 22 cents, which means 4 cents for Newton every time he winds up the pump crank. During the past June he wound it up 1,800 times, a profit of $72, and much more than he could earn by much harder labor of some other kind. His oil average is about 100 gallons a month. The expeditious delivery by pump and hose, instead of by pail and funnel, is a trade getter. Newton said he hesitated to buy the outfit, but never has had any reason to regret it.

Keeps Small Stock of Many Things.

The establishment is given an appearance of enterprise by its electric "Garage" sign; it is the only electric sign in Chittenango. Current is supplied by the little dynamo in the barn-shop, and the same source of supply lights the house and other buildings. There is but one other electrically lighted building in the whole village.

Next to the garage is the Dixon House, the village hotel, which is by no means a disadvantage, so far as location is concerned.

The stock of supplies is quite inclusive and is carried in a manner which requires the use of as small an amount of capital as is possible; instead of stocking up with a large quantity of the same article, Newton carries a small number and has many articles. Every week, or oftener if necessary, he runs in to Syracuse and replenishes his wares. Patches, tire repair materials, grease cups, nuts, bolts, and every sort of supply which is likely to be called for by the transient or village motorist is stocked, "and," said Newton, "they raise just as big a holler if I haven't got what they want as they would in a city garage. The trade has come to expect they can get everything they want here, and I try to live up to their expectations."

Making the Most of the Trade Instinct.

Also, there is the stock of Ford parts; the company requires him to carry $200 worth, and it has been found sufficient for his needs. He has about 75 Ford owners in his territory to care for and many more pass the door. He has no set rule for service to his owners, but uses his judgment as to what shall be done, and only in cases where the owner is naturally unreasonable has he experienced any material trouble in making satisfactory adjustments.

In the sale of cars Newton makes it a rule never to have more than two or three used cars in stock; if he has three and a man wants to trade in another, the dealer informs the prospect that it is impossible for him to do it, and even if he loses a sale he stands not to lose money in a used car stock. When the Motor World man called on Newton a Ford mechanic was there remedying trouble in the doors of a couple of cars which had in some manner not been quite properly fitted before shipment, and the Ford man was asked if Newton ever did much trading. The mechanic's idea of Newton's business ability was summed up in "He'd take a dog in trade." And another man who knows Newton supplemented this by the statement, "And he'd trade the dog and make money on him."

Newton himself laughs as he tells how some years ago he bought a dilapidated bicycle, traded several times until he got a new bicycle, traded it for an old motorcycle, kept trading until he got a new motorcycle, and then traded for an old car, thus providing the germ of his idea that he wanted to get into the automobile business. He never worked a day in a blacksmith shop or machine-shop, he said, but the Ford expert said, "They can't put anything over on him in the mechanical line."

Feminine Influence in the Business.

He is naturally a mechanic, and so is his wife. When he first started in business, being just married, of course his wife liked to go to the shop to talk to him, and it wasn't long before she was taking hold with the work for the pure enjoyment of it, and now she is capable of doing many things with a car. She can drive skilfully, adjust a carburetter and do almost anything that doesn't require hard manual labor. His working force consists of one man besides himself. Newton, although the Motor World man didn't know it until he had talked with him several minutes, is an admirer of Motor World and states that he has found much that is helpful to him in its Wide-Awake Merchandising Department and other stories. Mrs. Newton is no less interested.

Unlike many country garagemen, Newton believes firmly in advertising. He has frequently combined with the Ford dealers in Syracuse and other towns surrounding that city in a substantial space in Syracuse papers which called attention to the whole group; his territory includes the cillage of Canastota, a nearby village of between 3,000 and 4,000 inhabitants, and he uses the columns of the village papers to call attention to his business.

During the year he sells better than an average of a car a week. "I have sold two in one day," he remarked. "A man can surprise himself sometimes by what he can do if he gets a taste of blood."

Germany to Encourage Burning of Benzol.

Germany, which always evinces a keen interest in the solution of problems of a scientific character, has shown an appreciation of the automobile fuel situation by taking steps to promote the development of carburetters capable of vaporizing benzol as well as gasolene. A competition for benzol carburetters will be organized by the Prussian ministry of war, and four cash prizes offered, the amounts being $2,500, $1,250, $750 and $500, respectively, for the best four devices tested.

The competition will be held some time in December next, and is open to inventors of any nationality, it being stipulated, however, that in case a competitor from a foreign country wins a prize he must make arrangements for the manufacture of his carburetter in Germany. Both road and laboratory tests will be made, and different designs of the same device may be submitted for pleasure and commercial purposes. The points that will be considered will be those which naturally are of importance in such a device—simplicity and durability, economy and effectiveness in the use of fuel, noiselessness,, facility of starting in cold weather, range of action and adjustability for use with either benzol or gasolene. The fuel will be ordinary commercial benzol having a specific gravity of .88. Entries will be received up to November 1 by the Versuchs Abtheilung des Militar-Verkehrswesen, 2, Siegfriedstrasse Schoneberg, Berlin, while the entry fee of $125 for each carburetter will be received by the Kassen-Verwaltung at the same address.

What Shrinkage Will and Will Not Do.

There seems to be a rather prevalent idea that the heating and subsequent cooling of a piece of metal will cause its shrinkage—that is, that it will make the metal smaller than it was previous to heating. While it may be, perhaps, that there is a microscopic shrinkage as a result of heating and cooling, it is not sufficient to be detected by any ordinary means. The idea has its origin in the fact that heated metal expands and, upon cooling, returns to its original size. Thus, a metal ring, when heated, will slip over a shaft that would be too large were the ring cold, and upon cooling will contract and grip the shaft with a tremendous pressure. But if the ring is too large in the first place, heating and cooling will not make it fit the shaft any better, though not a few seem to be possessed of the idea that this will be the result, and many disappointments have resulted from the error.

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"INDIANA MADE" TOURISTS REACH THE "GOLDEN GATE"

Now on Last Leg of Journey to Los Angeles — Giant Redwood Tree and Rechristening of Pass to Commemorate Tour.

The "Made in Indiana" tourists have sighted the Pacific Ocean. The unimproved overland trail is past history and the "boosters" are now enjoying themselves on fairly good roads and under California's justly famed skies. The party reached the Golden Gate Monday, 28th inst., after a triumphal tour across the State from the Nevada line. Two hundred and sixty-two cars met the tourists outside of Oakland, and the Sunday quiet was badly disturbed in the crashing roar of welcoming horns.

Tuesday and Wednesday were spent in and about San Francisco, viewing, among other things, the grounds where 'Frisco is to hold its Panama-Pacific Exposition in 1915, and to-day the journey to Los Angeles, the ultimate goal, begins. The "boosters" are still boosting—even if Carl Fisher and ex-Mayor Bookwalter were temporarily incapacitated by a watermelon fest near Oakland—and the "natives" who have viewed the "Indiana-made" crowd and cars are not likely to forget soon that there is such a State.

For four thousand years—automobiles may be a thing far back in the race of progression and forgotten by then—the name of Carl G. Fisher, of Indianapolis, is destined to be handed down in California as the "big noise" in a band of "Indiana made" tourists who then may be regarded as having thought they did a big thing when they drove their cars from their State to the Pacific seaboard; his name is to be preserved on one of California's giant trees, a sequoia gigantea, which was planted by the residents of Big Pine last week, when the Indiana tourists reached the point where the Indiana Midland trail parts from the Los Angeles trail.

This tree should live 4,000 years unless something happens to it, and it is to be marked with a bronze plate suitably inscribed and enclosed in a bronze fence. Its name is the "Fisher Sequoit," and several thousand years from now, when Indiana "boosters" are soaring to the Pacific in their flying machines, they may point downward to where a mammoth redwood rears its branches and say, "That's the Fisher tree. Fisher? He was the original Indiana booster—and some booster, too."

This was not the only pleasant incident in the journey to Los Angeles, where the tour will end Monday, 4th prox., for when the party passed over the divide between Lake Mono and Long Valley they found their coming had been anticipated with a metal tablet, naming the top of the pass "Indiana Summit," which name will be recognized by geographists.

The original schedule called for Los Angeles by August 2, but delays in the mountains before reaching Carson City, Nev., caused a setback of one day. Prior to that, in Casa Diable, which sounds as if it might mean "Devil's House," or something like it, the tourists nearly froze in their night camp. They crawled into a hay mow as a last resort, but even then they shivered, and the California morning sun was extremely welcome.

All along the way there have been enthusiastic greetings and, after a pleasant sightseeing trip along Lake Tahoe, across which the cars were ferried, a good share of the population of Sacramento turned out in welcome, and Wild West shows and other entertainment were injected nito the schedule. Sacramento was reached Saturday evening, 26th inst., and Stockton and Oakland were covered Sunday.

The welcomes along the route have been lent an official flavor. Governor Oddie of Nevada attached himself to the party in his State and remained a loyal follower until he could turn the strangers over to Governor Johnson of California across the Nevada-California line. Now and then a washed-out piece of road had to be reconstructed, and sage brush for miles wiped the mud and dust from the bottoms of the cars, but mishaps have been few.

The "boosters" have had little serious trouble and decline to regard night freezings and daytime roastings or rough roads as a mar to pleasure. Of course, the Premier truck was lost for two days in the Nevada desert, the crew running out of water and having to walk miles to get more, and the Pathfinder car was lost for the same length of time and had to drive nights to catch up, but those are regarded as mere incidentals by these trail blazers, who believe that when the speedometers total 3,539.4 in Los Angeles and they have given their final "boost" it will not have been in vain. Fisher, whose dream was the father of what may be a big coast-to-coast automobile road, has already dreamed still more and now sees a telephone system paralleling the route. The real trail blazing ended at the California-Nevada line, for the California roads are already built.

Catron Sets up "Closed Car" Record.

J. W. Catron has accomplished what he set out to do, and now has a new kind of a record to his credit; he is the first man to cross the American continent in a closed automobile, and he is justly proud of his record. Catron, who is a Los Angeles machinery contractor, left his home city together with his wife and a maid and his brother, to say nothing of lots of luggage, same 21 days ago in a Studebaker "35" Sedan and just has finished his trip at Rochester, N. Y., none the worse for the experience and particularly enthusiastic over the advantages of the closed car for transcontinental touring. So comfortable did the car prove on the long drive that he will tour down to New York City and in all likelihood will return to his home the same way. When the schedule first was laid down, Catron figured on making 103 miles a day, but he soon found that 125 miles could be covered without difficulty, and even this schedule was bettered for the best part of the distance.

Joy Ride Record—Makes 1,200 Miles.

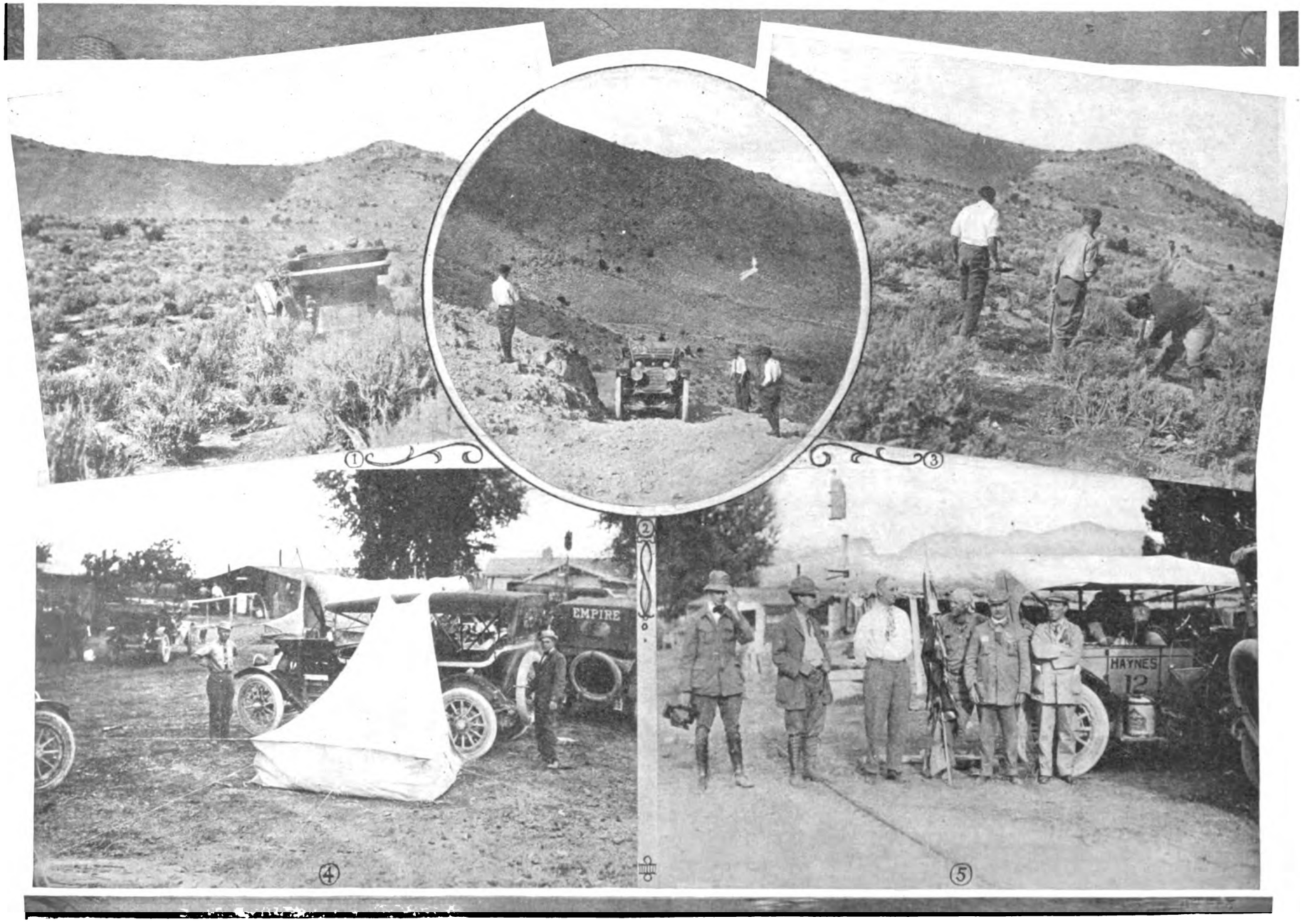
Ralph Reynor, former chauffeur for Col. Willis Wood, of Kansas City, Mo., is 40 years old and should have known better, but this doesn't release him from answering a charge of having stolen his employer's car and established what probably is a record for "joy riding." He evidently had a good time while he was at it, for while he started from Kansas City, he traveled 1,200 miles in 12 days, winding up in Portsmouth, Va., with two women companions. In this "burg" the chief of police, F. T. Tynan, picked the car up on description and claimed the $500 reward. Before starting, Reynor, it is charged, had new tires, accessories and repairs charged to the Colonel and also bought 500 of the Colonel's favorite cigars on the same basis. He was trailed to the Kansas City city line, where the trail was lost. The car, a green Speedwell, was not difficult of apprehension if watch were kept for it.

Another Chauffeur Gets Fourteen Years.

A second 14-year sentence for killing a pedestrian with an automobile has been meted out in Chicago to a car driver; the chauffeur who was given this sentence last week is Fred Hrodek, 23 years old, of 4403 Madison street, who March 19 ran into and killed Patrick J. Condon, of 1236 West Harrison street, at West Madison street and Clark avenue, with a truck. There were several automobile men on the jury, but this fact, aside from causing considerable speculation, seemed to have no bearing on the consideration of the case and Hrodek was given 14 years in the penitentiary. His speed is said to have been 35 or 40 miles an hour. May 2, Lawrence Lindbloom, a chauffeur, was given a similar sentence for killing Joseph Weiss, a cigar manufacturer. Weiss was struck and dragged a considerable distance, and the manner of his fatal injury aroused public sentiment.

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WITH THE "MADE IN INDIANA" TOURISTS FAR, FAR FROM THE HOOSIER STATE



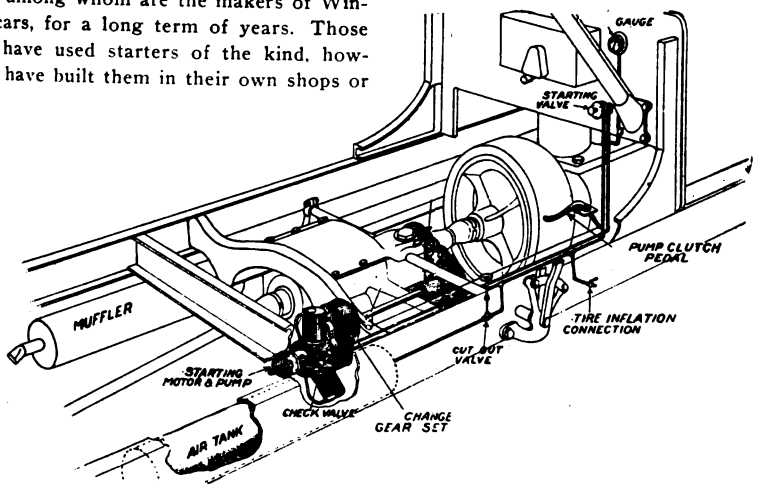
1—FOLLOWING A TRAIL THROUGH THE SAGE BRUSH ON THE DESERT IN UTAH. 2—A STIFF CLIMB ON THE BRINK OF A PRECIPICE. 3—CLEARING A PATH AROUND A WASHOUT IN THE DESERT. 4—CAMPING OUT AT KEARNEY'S RANCH. 5—GOVERNOR SPERRY, OF UTAH, ELWOOD HAYNES AND OTHERS

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USING AIR IN PLACE OF THE STARTING CRANK

Some Systems That Convert Motors Into What Corresponds to the Steam Engine and How They Work—Reciprocating and Rotary Air Motors Used in Others—Eliminating the "Dead Center."

In the long roster of mechanical engine starters, part of which was published in Motor World last week, and in which five pneumatic devices were illustrated and described, no mention was made of what is known as the "piston pressure" starter, though this system probably is the simplest of them all; probably it was the first successful type of compressed air starter in use, and it has been used with excellent results by a number of manufacturers, prominent among whom are the makers of Winton cars, for a long term of years. Those who have used starters of the kind, however, have built them in their own shops or have had them built to measure, so to speak; comparatively few manufacturers produce devices of the kind, which accounts in a measure for the little that is known about them as compared with starters of other types.

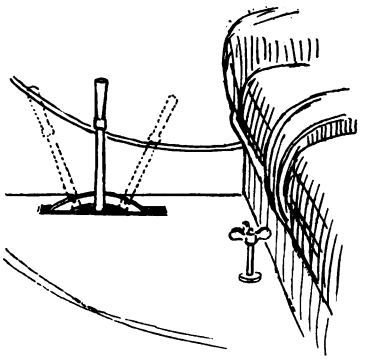


AKRON COMPRESSOR-MOTOR SYSTEM INSTALLED

In action, they virtually convert the automobile motor for a time into what corresponds to a steam engine; instead of rotating the crankshaft in the usual way until a mixture of gasolene and air is drawn into the cylinders, compressed and fired by the ignition spark, thus starting the engine on its own cycle of operations, they apply the power directly to the top of one of the pistons and in this way rotate the crankshaft; thereafter their action is similar to the action of any other kind of a starter, except that there is only one moving part, unless a compressor is used, when there are two. In other words, the compressed air in the reservoir corresponds to the steam in the boiler of a steam engine, and when it is admitted behind the piston it forces the piston downward on the power stroke.

Similarly, like a steam engine, any four-cylinder automobile motor is likely to stop on "dead center," when the application of all the compressed air in the world would prove of no avail in starting it. Six-cylinder engines, however, cannot stop on dead center, as is pretty well known, and it is on engines of this kind that the piston pressure starter is most serviceable and most used. On a four-cylinder motor that has been in use for some time and that has had time to get its bearings smoothed down and is otherwise in good condition, the piston pressure starter can be expected to do good work, for a smoothly running engine that is free from all tendency to bind seldom will stop on dead center; generally two pistons will balance the other two, leaving one cylinder with the valves closed and ready to fire; but if it should stop on dead center nothing remains but to use the hand crank.

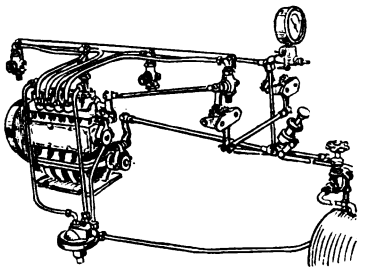
Among the very few manufacturers who exploit a device of this type, the Roth-Murphy Engine Starter Co., of Indianapolis, Ind., has developed a system that has a number of distinctive characteristics. Two systems are manufactured and they are widely different. In the first of them, air is compressed and stored in a reservoir by means of a diminutive two-cylinder air compressor and is distributed to the cylinders of the gasolene motor through a rotating disk valve that forms part of the compressor, as is shown by one of the accompanying pictures. The rotary disk valve is so timed that when the master air valve is opened the compressed air is forced into the cylinder in the firing position—the cylinder that has both its valves closed with the piston at the top of the stroke, in other words. In the care of this particular compressor and disk valve it is only necessary to keep the tiny crankcase of the compressor full of oil to the level indicated on the glass gauge on the side; replenishment probably will be necessary about once or twice a month, depending upon the amount the compressor is used.



ARBITER CONTROL LEVER

In the second type of Arbiter starter, as it is styled by the Roth-Murphy people, a three-cylinder combined air compressor and reciprocating air motor is used, and this is geared directly to the forward extension of the engine crankshaft. Obviously, with this type of starter the power is applied directly to the crankshaft, instead of through the cylinders; consequently there can be no failure through the engine coming to rest on dead center. The starter is operated by a small lever—it is shown by one of the accompanying pictures—running over a quadrant with three positions: forward, starting; central, which is the neutral position, and to the rear, which is the compressing position. So that no harm will come to the starter through a back kick from the engine, the drive is through a positive dental clutch which releases instantly the gasolene engine takes up its own cycle of operations. In this compressor-

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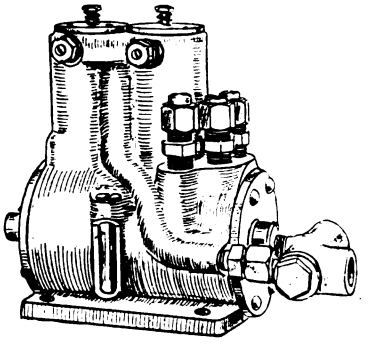


LOMBARD SYSTEM COMPLETE

motor, too, lubrication is carried on entirely by splash and the only attention required is to fill the oil reservoir from time to time. Valves are so arranged that wear tends to make them seat better and therefore they never will require to be touched throughout the life of the starter. The appearance of the unit with its gearing all enclosed is shown by the accompanying sketch. Though the tank and line connections are constructed and tested for 500 pounds pressure, the normal pressure carried is approximately 200 pounds.

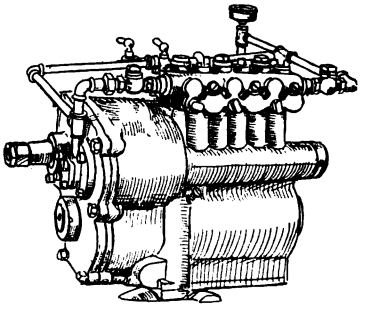
The Lombard starter, which is produced by the Clark Novelty Co., of Rochester, N. Y., is very unusual, in that it is designed effectually to overcome the possibility of failure of the starter through the engine to which it is attached coming to rest with the pistons on dead center. The essential elements of the system include a four-cylinder air compressor, a distributor, a pressure reducing valve, suitable check valves for the cylinder heads and an air storage reservoir.

In operation, depression of the master air valve control pedal permits compressed air to flow through the distributor, which is timed with the expansion strokes of the pistons, and causes the engine to run backward for part of a revolution or until one of the pistons is in the proper position to receive the charge of compressed air from the tank. To prevent the engine being turned backward too far, the air first is admitted through a pressure-reducing valve. The piston stopping in the right place is ensured by a cam cutting off the air, and also by the fact that the pressure used is lower than compression pressure. With the piston in the proper place, air under the full pressure in the tank automatically is admitted to the cylinders in their firing order until the motor takes up its own cycle of operations. The arrangement of the whole system is shown by the accompanying picture, which shows the combined pump and distributor. The pump normally is driven at crankshaft speed, and the distributor is timed with the valves.



ARBITER AIR COMPRESSOR

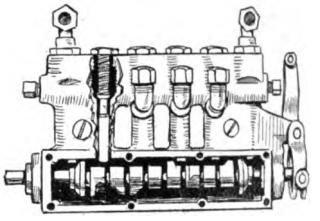
In the care of this system there will be little to do except to see that the moving parts do not want for lubrication; another important feature is to make sure that looseness in the parts does not develop—particularly in the rods that lead from the dash control—for if it does it is likely to impair the efficiency of the starter by not causing the valves to open properly or to close properly. When leaving the car over night it is a wise precaution to close the shut-off valve and in this way ensure the retention of the charge of air in the reservoir.



SCHIMPF UNIT SYSTEM

In the Akron system, which is produced by the Motor Starting Co., of Akron, Ohio, and which is shown herewith as it is applied to a car, the operative functions are carried out in an entirely different manner; the system belongs in the class given over to those in which a small reciprocating air motor supplies the power necessary for the initial revolutions of the gasolene engine. The motor used in the Akron system, as is made plain by the picture, is a miniature three-cylinder machine which operates also as a compressor when it is driven by the gasolene engine; the method of connection is by means of a "silent" chain to the clutch shaft.

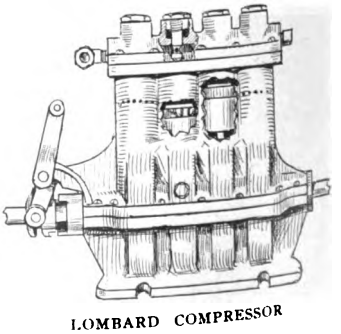
Incorporated with the motor-compressor there is a tiny change gearset which regulates the speed of the motor-compressor according to the function it is performing; thus, when it is operating as a motor its speed is higher than when it is operating as a compressor. The changes of gear are automatic, however, and are controlled by the device itself. When the dash button is pressed to start the motor, for instance, the air motor drives direct, and when the little clutch pedal is depressed the gears automatically come into use. Air is stored in a reservoir measuring 7 x 36 inches, carried at any convenient place beneath the chassis.



LOMBARD CAM DISTRIBUTER

With this system, as with the others, care means, briefly, lubrication of the moving parts and particularly the little combined motor and generator. From time to time the air connections should be gone over—this applies to all the air systems—and where necessary they should be tightened, for, regardless of how tight they may have been in the first place, vibration always is likely to loosen them after a time. Failure of the air pressure at a critical time has been the direct cause of more blame aimed at air starters than has anything else, though much of this trouble can be eliminated with reasonable care.

The Schimpf starter, which is manufactured by Walter H. Schimpf, of New York City, is an unusual device in a number of respects. It has a very ingenious combined compressor and motor, the functions of which automatically are controlled by the pressure of the air in the reservoir. In its simplest aspect, the Schimpf unit is a four-cylinder machine with the cylinders set V-fashion. The valves are ball checks contained in recesses near the heads of the cylinders, and when the unit is operating as a motor they are operated mechanically by means of tiny push rods and a miniature cam shaft. When the unit operates as a compressor, however, the valves are operated automatically. This change is brought about automatically by longitudinal move-



LOMBARD COMPRESSOR

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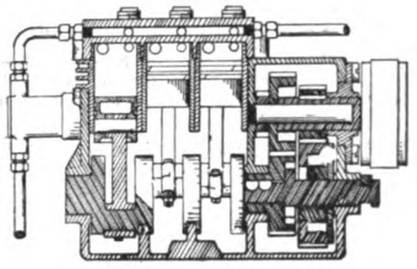
ment of the camshaft which operates the valves.

In the air line between the storage tank and the compressor-motor there is a cylinder and a plunger which is attached to and slides the camshaft longitudinally; the camshaft is held with the cams out of operation by means of a spring. Hence, when air under pressure is released to the line, the camshaft is moved longitudinally; this brings one of its cams under one of the push rods which opens one of the valves and permits the air access to the cylinder. The other cams operate successively and for the time being the unit operates as a plain air motor.

Instantly the air valve from the reservoir is closed, however, the spring pressure returns the camshaft to the normal position and the unit automatically becomes a compressor. In order to connect and disconnect the compressor, another cylinder and plunger, operating a simple dental clutch is employed. As soon as the pressure in the tank reaches 200 pounds the internal mechanism of the compressor remains idle; when it drops below that figure, the compressor automatically comes into action and remains running until the desired pressure is obtained. Between the motor-compressor unit and the gasolene engine there is a double two-to-one gear reduction operating through two roller clutches. Thus, when the unit operates as a compressor one clutch releases and overruns and the other permits the proper compressor speed; similarly, when the unit operates as a motor, the other clutch releases and gives the proper reduction for starting the engine. Final connection between the unit and the gasolene motor can be made in a number of different ways and is immaterial.

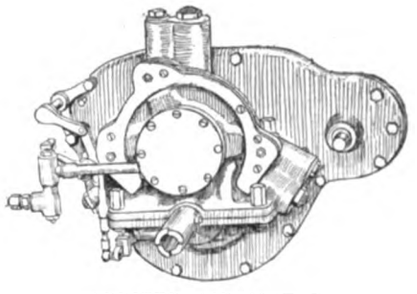
The Christensen starting system which is manufactured by the Christensen Engineering Co., of Milwaukee, Wis., does not belong truly in the class with other pneumatics, although it relies primarily upon air pressure for operation; it belongs more properly among the class of ignition starters, for it depends actually upon the explosion of a charge of gasolene and air in the cylinders to start the motor.

In its essential elements, it consists of a small single-cylinder air compressor that may be geared to the gasolene engine so as to operate at crankshaft speed, an air reservoir, a distributor valve, a small auxiliary carburetter connected to the main gasolene tank and the necessary check valves for the cylinders. In operation, air is compressed by the pump and released by a valve through the auxiliary carburetter and distributed to the cylinders in their firing order. The ignition spark previously having been turned on the compressed mixture within the cylinders explodes and thus starts the motor.



SCHIMPF UNIT DETAILS

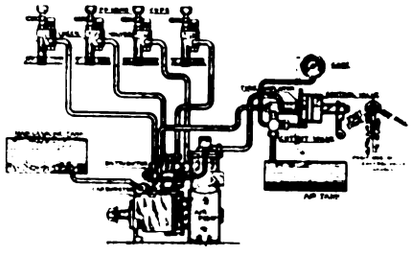
One individuality of the Christensen system is that the compressor automatically is thrown into and out of operation by the pressure of the air itself. When the operating lever on the dash is turned to the right and the central button depressed, a passage from the compressor to the tank is opened and the compressor restores the pressure; when the lever is placed centrally, the compressor automatically is disengaged, but when the lever is moved very slowly from right to center the compressor remains in operation and tires may be inflated direct by attaching a hose to the control valve which opens to the atmosphere. When



ARBITER AIR MOTOR

the handle is turned to the left and the central button depressed air is permitted to flow from the tank through the auxiliary carburetter—it is entirely separate from the regular engine carburetter—to the cylinders through the distributor. Although the air pressure may cause the pistons to move, their movement is of short duration and the starting function proper is carried on by the explosion of the mixture within the cylinders.

In the care of the Christensen system, as with any other, lubrication of the compressor and of any other moving parts is of prime importance if satisfactory service and freedom from trouble is to be expected. Saving only to see that air connections are maintained perfectly tight, there is little to do.



CHRISTENSEN IGNITION SYSTEM

Making Tools More Easily "Getatable."

There is one thing about tools—that is, tools that are carried on an automobile—that most people have noticed. They always are wanted in a hurry, when they are wanted at all, and they always are put away in a hurry. Ordinarily the result is chaos in the tool box, and the next time any particular implement is needed it has to be dug up from beneath all of the others. An excellent scheme is to have the tools that are most in demand—pliers, screwdrivers, hammer, a few much-used wrenches, etc.—in a small leather bag, which can be grabbed in an instant and the right tool picked out, and can be as quickly re-packed and put away. Less used tools can be rolled up, or otherwise disposed of, but the ones that are sure to be needed when there is anything to be done should be right at hand, and a little forethought of this kind pays well.

Adjustments that Require Time to Show.

When making motor adjustments it usually is necessary to exercise a little patience in order to get the best results, for the reason that the effects of adjustments are not always instantly apparent. In carburetter adjustments, for instance, the motor must be given a little time to feel the changes made, and the results obtained immediately following the turn of a needle-valve or an air-valve spring may be misleading. The same is true of lubrication adjustments, only to a much greater extent, for it is clear that it takes some time for oil previously supplied to work through and for the new rate of supply to settle down to steady work. "Make haste slowly" is an old saw that fits the case very well.

Value of Mending Tire Cuts Quickly.

It is believed by some that a tire cut that is repaired while still fresh, immediately after it is has been made, will be a better job and more lasting than if the cut is allowed to stand for some time before mending. Whether there is any truth in the idea or not, it is a fact that a cut cannot be mended too soon, and this for obvious reasons.

Getting Pure Gasolene from the Earth.

According to a report from abroad, an oil well has been sunk in the Emilia district in Italy from which pure gasolene is taken, its specific gravity being .757 in its crude state. Upon distillation at 150 degrees C., or less, all the oil passes over, leaving no residue.

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1,046,359. Two-Cycle Engine. Alexander Winton and Harold B. Anderson, Cleveland, Ohio, assignors to the Winton Motor Carriage Co., Cleveland, Ohio. Filed April 2, 1908. Serial No. 424,817. (Two-cycle motor with gas chamber and ports in piston body.) 4 claims.

1,046,388. Motor Vehicle. Louis A. Hill, Washington, D. C., assignor to Pneucar Co., Washington, D. C., a corporation of Delaware. Filed Nov. 4, 1911. Serial No. 658,570. (Spring supported power and transmission systems.) 7 claims.

1,046,392. Explosive Engine. Martin C. Kessler, Denver, Col., assignor to the Kessler Motor Co., Denver, Col. Filed Sept. 6, 1907. Serial No. 391,-675. (Opposed four-cycle motor using crankcase compression to pump air to cylinders.) 10 claims.

1,046,407. Starting Device for Explosive Engines. Lewis C. Van Riper, New York, N. Y. Filed Feb. 20, 1911. Serial No. 609,760. (Friction-clutch anti-kick crank.) 9 claims.

1,046,451. Tire-Mail. Joseph B. Duhring, Chestnut Hill, Pa. Filed Dec. 15, 1911. Serial No. 665,932. (Sheet metal link armor imbedded in tire tread.) 8 claims.

1,046,463. Electric Circuit Controller. Walter D. Heath, Lakeport, N. H., assignor, by mesne assignments, to A. V. Mfg. Co., New York, N. Y., a corporation of New York. Filed Nov. 23, 1911. Serial No. 661,970. (Timer with bell-crank contact levers.) 7 claims.

1,046,491. Gas Engine. Alfred Randolph, Salem, Ohio. Filed Aug. 24, 1910. Serial No. 578,740. (Two-cycle motor with extra piston for augmenting crank-case compression.) 5 claims.

1,046,495. Vehicle Brake. Frederick Henry Royce, Derby, England. Filed Oct. 27, 1911. Serial No. 657,-148. (Toggle-operated expanding brake.) 1 claim.

1,046,524. Oiling System. Charles E. Wiffler, Detroit, Mich. Filed Jan. 17, 1910. Serial No. 538,345. (Oil distribution to crankcase and gearcase of unit power plant by flywheel.) 2 claims.

1,046,553. Spring Suspension for Vehicles. John Joseph Charley, Malvern, Victoria, Australia, and Frederick Lamplough, London, England; said Lamplough assignor to said Charley. Filed March 26, 1912. Serial No. 686,444. (Lever linkage in combination with leaf and coil springs.) 4 claims.

1,046,565. Wind Shield Attachment. William R. Donegan and John J. Walsh, Hartford, Conn. Filed Jan. 9, 1911. Serial No. 601,520. (Windshield supporting system.) 6 claims.

1,046,606. Spring Wheel. Starling Kilgore, Crosby, Tex. Filed July 20, 1912. Serial No. 710,719. (Wheel with coil spring spokes and jointed levers between hub and rim.) 1 claim.

1,046,629. Fastening Device for Tires. William Robert Morrison, Chicago, Ill. Original application filed April 17, 1911, Serial No. 621,476. Divided and this application filed Oct. 30, 1911. Serial No. 657,-549. (Expanding and contracting ring solid tire fastening.) 3 claims.

1,046,656. Shock absorber. Fridolin Schimmel, Faribault, Minn. Filed Dec. 11, 1911. Serial No. 669,996. (Double-arm and segment friction shock absorber.) 3 claims.

1,046,681. Automobile Chassis. Morris S. Towson, Cleveland, Ohio. Filed April 1, 1909. Serial No. 487,-188. (Power plant carried on reach between axle and cross frame, driving through gearbox on rear axle.) 2 claims.

1,046,687. Rotary Engine. John Herbert Van Deventer, Buffalo, N. Y., assignor to Buffalo Forge Co., Buffalo, N. Y., a corporation of New York. Filed April 22, 1912. Serial No. 692,310. (Rotary motor with two herringbone gear rotors with intermeshing teeth.) 10 claims.

1,046,704. Explosive Engine. Samuel Ybarra, St. Louis, Mo. Filed Jan. 26, 1912. Serial No. 673,556. (Two-cycle motor with two-diameter piston and cylinder.) 6 claims.

1,046,712. Resilient wheel. Bedolph Anderson and Clyde L. Miles, Boston, Mass. Filed Sept. 16, 1910. Serial No. 582,425. (Wheel with spring-cushioned hub.) 5 claims.

1,046,738. Gas Engine. Frank L. Cross, Wollaston, Mass. Filed Feb. 24, 1908. Serial No. 417,282. (Speed regulation of two-cycle motor by returning part of charge to crankcase on compression stroke.) 7 claims.

1,046,756. Automobile Horn. Delroy Fifield, Cleveland, Ohio. Filed Feb. 12, 1912. Serial No. 677,261. (Exhaust operated horn.) 2 claims.

1,046,774. Vehicle Tire. John J. Grefenstette, Pittsburgh, Pa. Filed Oct. 31, 1911. Serial No. 657,756. (Solid tire and bolt retainers.) 1 claim.

1,046,804. Wheel of Vehicles. Edward Claude Kingsford, London, England; Philip Arthur Kingsford, Flimwell, England, executor of said Edward Claude Kingsford, deceased. Filed April 1, 1911. Serial No. 618,453. (Pneumatic tire with solid tread clamped on, and means for securing to rim.) 1 claim.

1,046,808. Controlling Device. Max Kuhn and Raphael Netter, New York, N. Y.; said Netter assignor to said Kuhn. Filed Aug. 26, 1911. Serial No. 646,181. (Taximeter connected with passenger's seat, pressure on seat connecting meter with driving mechanism.) 13 claims.

1,046,825. Gas Starter for Internal Combustion Engines. Thomas J. McCarthy, Detroit, Mich. Filed July 17, 1912. Serial No. 709,851. (Ignition starter with separate starting fuel tank.) 9 claims.

1,046,846. Circuit Controller. Daniel L. Ordway and John W. Brown, Lakewood, Ohio, assignors to National Carbon Co., Cleveland, Ohio, a corporation of New Jersey. Filed April 22, 1909. Serial No. 491,444. (Combined timer and distributer.) 4 claims.

1,046,855. Tire-Clencher-Ring Lock. Peter Recconi, San Francisco, Cal. Filed Oct. 21, 1911. Serial No. 655,899. (Clincher tire retaining-ring and locking device.) 2 claims.

1,046,900. Shock Absorber. Roy James Thompson, Muskegon, Mich. Filed Feb. 16, 1911. Serial No. 609,044. (Piston-and-cylinder shock absorber.) 1 claim.

1,046,917. Fender. Charles H. Wegner, Baltimore, Md., assignor of one-third to Henry F. Sleepack and one-third to Amelia C. Wegner, Baltimore, Md. Filed Feb. 13, 1912. Serial No. 677,329. (Automobile fender of street car or pick-up type.) 4 claims.

1,046,947. Safety Cranking Device for Explosive Engines. John L. Beck, Springfield, Mass., assignor, by mesne assignments, to Auto Safety Crank Co., Holyoke, Mass., a corporation of Massachusetts. Filed Nov. 4, 1910, Serial No. 590,687. Renewed Aug. 16, 1911. Serial No. 644,452. (Anti-kick crank with friction clutch.) 10 claims.

1,046,988. Hydro-Carbon Motor. Paul Daimler, Stuttgart, Germany, assignor to Daimler Motorengesellschaft, Unterturkheim-Stuttgart, Germany. Filed May 29, 1909. Serial No. 499,249. (Motor in which fuel is pre-heated and enters mixing chamber under pressure.) 1 claim.

1,046,989. Shock-Absorber for Vehicles. Henry Allen Dalley, Ardmore, Pa. Filed Dec. 18, 1911. Serial No. 666,472. (Pivoted lever shock-absorber with spring resistance.) 2 claims.

1,047,017. Door Curtain for Vehicles. Horace Ervien, Ogontz, Pa. Filed Dec. 28, 1911. Serial No. 668,382. (Section of side curtain swinging with door.) 5 claims.

1,047,015. Valve for Explosive Engines. William C. Elrod, Fair Play, Mo. Filed Jan. 2, 1912. Serial No. 668,858. (Removable water-jacketed valve cage.) 3 claims.

1,047,109. Friction Clutch. William H. Nelson, Ardmore, Pa. Filed Jan. 27, 1912. Serial No. 673,-802. (Expanding clutch with segmental friction members.) 2 claims.

1,047,166. Repair or Reinforcement of Pneumatic Tires. Thomas Edwin Cann, Leicester, England. Filed June 9, 1910. Serial No. 565,985. (Tire repairing system employing leather and fabric for patches.) 2 claims.

1,047,190. Resilient Wheel. Wayne C. Fickes, Shirland, Ill. Filed Oct. 21, 1911. Serial No. 656,-075. (Double-rimmed wheel with outer rim spring-supported from inner rim.) 6 claims.

1,047,197. Automobile Fire Engine. Henry M. Gabel, Cincinnati, Ohio. Filed Aug. 17, 1912. Serial No. 715,556. (Gasolene motor drive for steam fire engine.) 6 claims.

1,047,204. Inner Tube Guard for Pneumatic Tires. Siegfried Goodman, Bayonne, N. J. Filed Dec. 13, 1911. Serial No. 665,419. (Tire boot of layers of fabric secured by straps.) 1 claim.

1,047,227. Internal Combustion Turbine. Ezra F. Hopkins, Chicago, Ill. Filed Jan. 11, 1910. Serial No. 537,447. (Radial cylinders surrounded by rotor with buckets or vanes.) 18 claims.

1,047,232. Rotary Explosive Engine. Sidney H. Ivery, St. Louis, Mo. Filed Nov. 17, 1911. Serial No. 669,837. (Revolving cylinder motor.) 9 claims.

1,047,238. Vehicle Steering Mechanism. Samuel H. Kennedy, Tunnel Hill, Ga. Filed Jan. 6, 1912. Serial No. 669,771. (Rack-and-pinion gear with link and lever connections to pivots.) 5 claims.

1,047,268. Cushion Wheel. John Millar, Arlington, N. J., assignor of one-half to Duncan Campbell, Arlington, N. J. Filed March 3, 1911. Serial No. 612,-129. (Pneumatic-cushioned wheel.) 5 claims.

1,047,271. Convertible Motor-Boat and Automobile Combined. Hartley A. Mitchell, Newport News, Va. Filed Nov. 13, 1911. Serial No. 660,067. (Boat-automobile with means for housing wheels when in the water.) 22 claims.

1,047,276. Speed-Controlling Device. Burt G. Nelson, Milwaukee, Wis. Filed March 20, 1911. Serial No. 615,468. (Electric speed control operated by speedometer.) 4 claims.

1,047,286. Motor Vehicle. James E. Plew, Chicago, Ill. Filed April 5, 1909. Serial No. 487,956. (Seat-backs that can be lowered into a horizontal position, forming a continuous surface with the seat cushions.) 3 claims.

1,047,297. Resilient Wheel. Lewis S. Robbins and John R. Davis, Vine Grove, Ky. Filed April 15, 1911. Serial No. 621,343. (Wheel with hub cushioned by small pneumatic tire.) 1 claim.

1,047,3033. Spare-Tire Cover. Henry A. Sallop, New York, N. Y. Filed Feb. 26, 1910. Serial No. 546,143. (Spare tire cover in two sections.) 3 claims.

1,047,310. Side Curtain for Automobiles. George W. Scott, Troy, Ohio, assignor to The Star Storm Front Co., Troy, Ohio, a corporation of Ohio. Filed April 13, 1910. Serial No. 555,229. (Flexible support for side curtains.) 5 claims.

1,047,319. Spring Vehicle Wheel. Cicero G. Smith, Palisades, Col. Filed Sept. 27, 1911. Serial No. 651,662. (Wheel with curved spring spokes.) 4 claims.

1,047,329. Electro-Magnetically-Controlled Power-Transmission Mechanism. August Sundh, Yonkers, N. Y., assignor to Otis Elevator Co., Jersey City, N. J., a Corporation of New Jersey. Filed March 6, 1909. Serial No. 481,839. (Electro-Magnetic control for hydraulic transmission.) 32 claims.

1,047,407. Resilient Tire for Vehicles. Harry D. Hart, San Diego, Cal. Filed Nov. 13, 1911. Serial No. 659,959. (Woven wire cable coiled to form a tire.) 4 claims.

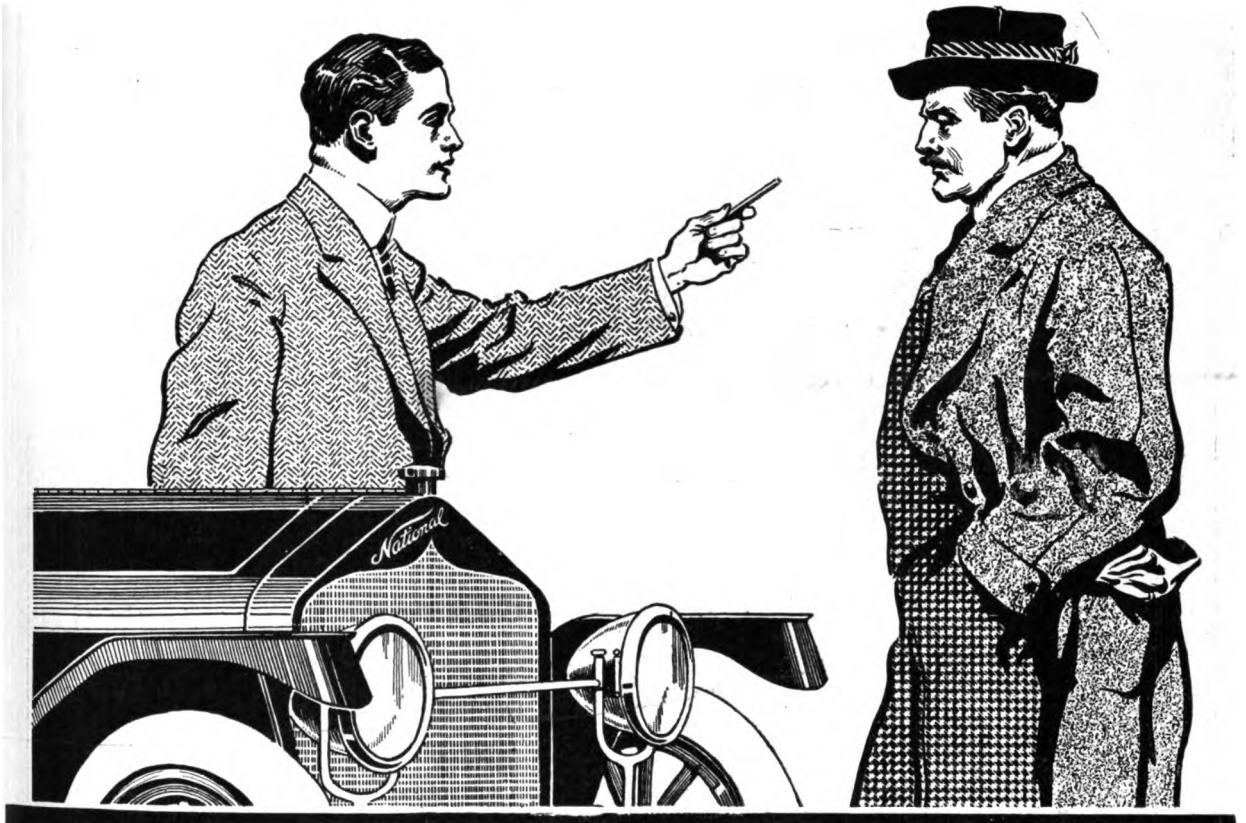
1,047,409. Pneumatic Tire Pump Coupling. Reginald F. Hersey, Beverly, Mass. Filed Jan. 6, 1912. Serial No. 669,900. (Cam for clamping coupling to valve.) 1 claim.

1,047,477. Shock-Absorber. Gideon D. Yates, Isle, N. Y. Filed July 13, 1912. Serial No. 709,282. (Auxiliary spring device for single cross-spring suspension.) 5 claims.

1,047,485. Combination Spring-Cushion Tire Wheel. Robert F. Balding and Howard Pratt Garland, Los Angeles, Cal. Filed March 6, 1907. Serial No. 360,-978. (Pneumatic tire inside rim.) 6 claims.

1,047,527. Gas Engine Starter. Charles Francis Jenkins, Washington, D. C. Filed Nov. 11, 1910. Serial No. 591,797. (Distributer system for air starter.) 1 claim.

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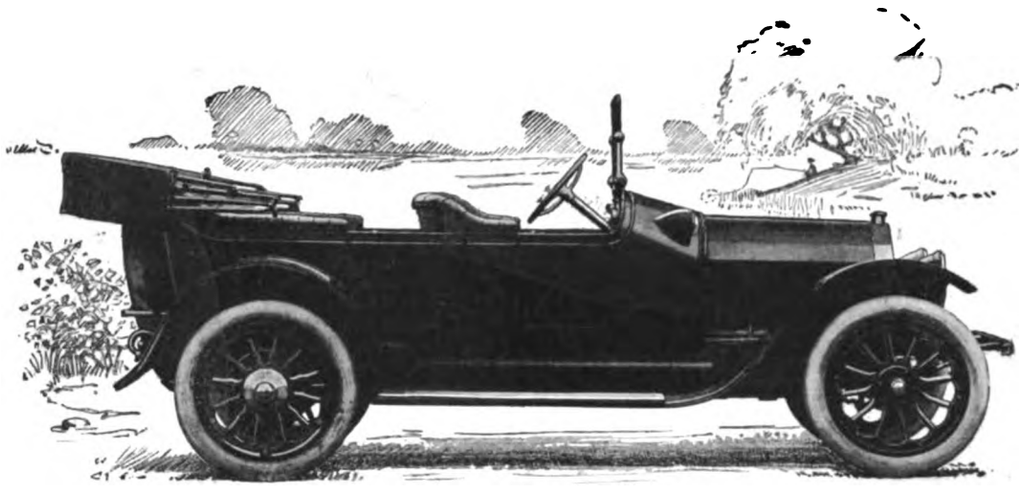
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40 horse power *120 inch wheelbase*

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Write your name on the margin and get **1914** Pathfinder literature

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Commerce Motor Truck Co. ..... Detroit, Mich.
Corbitt Automobile Co. ..... Henderson, N. C.
Crane Motor Car Co. ..... Bayonne, N. J.
Crawford Automobile Co. ..... Hagerstown, Md.
Crescent Motor Co. ..... Cincinnati, Ohio
Crow Motor Car Co. ..... Elkhart, Ind.
Croxton Motor Car Co. ..... Washington, Pa.
Jas. Cunningham Son & Co. ..... Rochester, N. Y.
Cutting Motor Car Co. ..... Jackson, Mich.

D

Geo. W. Davis Carriage Co. ..... Richmond, Ind.
Di Dion Bouton ..... New York City
Dorris Motor Car Co. ..... St. Louis, Mo.

E

Elkhart Carriage & Harness Co. ..... Elkhart, Ind.
Enger Motor Car Co. ..... Cincinnati, Ohio

F

F. I. A. T. Company ..... Poughkeepsie, N. Y.
Flanders Motor Co. ..... Detroit, Mich.
H. H. Franklin Mfg. Co. ..... Syracuse, N. Y.

G

Gramm-Bernstein Co. ..... Lima, Ohio
Gramm Motor Truck Co. ..... Lima, Ohio
Gramm Motor Truck Co. ..... Walkerville, Ont.
Great Western Automobile Co. ..... Peru, Ind.

H

Havers Motor Car Co. ..... Port Huron, Mich.
Haynes Automobile Co. ..... Kokomo, Ind.
Henderson Motor Car Co. ..... Indianapolis, Ind.
Herreshoff Motor Co. ..... Detroit, Mich.

I

Ideal Motor Car Co. ..... Indianapolis, Ind.
Imperial Automobile Co. ..... Jackson, Mich.

J

Jackson Motor Car Co. ..... Jackson, Mich.

K

Kelly-Springfield Motor Truck Co. ..... Springfield, Ohio
King Motor Car Co. ..... Detroit, Mich.
Kissel Motor Car Co. ..... Hartford, Wis.
Kline Motor Car Co. ..... Richmond, Va.
Knox Automobile Co. ..... Springfield, Mass.
Krit Motor Car Co. ..... Detroit, Mich.

L

Lenox Motor Car Co. ..... Boston, Mass.
Lexington Motor Car Co. ..... Connersville, Ind.
Little Motor Car Co. ..... Flint, Mich.
Locomobile Company of America ..... Bridgeport, Conn.
Lorier Motor Car Co. ..... Detroit, Mich.
Lyons Atlas Co. ..... Indianapolis, Ind.

M

W. H. McIntyre Co. ..... Auburn, Ind.
McLaughlin Motor Car Co. ..... Oshawa, Ont.
Marathon Motor Co. ..... Nashville, Tenn.
Marion Motor Car Co. ..... Indianapolis, Ind.
Maritime Motor Car Co., Ltd. ..... St. John, N. B.
Martindale & Millikan ..... Franklin, Ind.
Maxwell Motor Car Co. ..... Detroit, Mich.
Mercer Automobile Co. ..... Trenton, N. J.
Metzger Motor Car Co. ..... Detroit, Mich.
Michigan Buggy Co. ..... Kalamazoo, Mich.
Midland Motor Car Co. ..... Moline, Ill.
Mitchell-Lewis Motor Car Co. ..... Racine, Wis.
Moline Automobile Co. ..... East Moline, Ill.
Moon Motor Car Co. ..... St. Louis, Mo.
Motor Car Mfg. Co. ..... Indianapolis, Ind.

N

Nance Motor Car Co. ..... Philadelphia, Pa.
National Motor Vehicle Co. ..... Indianapolis, Ind.
Nordyke & Marmon Co. ..... Indianapolis, Ind.
Norwalk Motor Car Co. ..... Martinsburg, W. Va.
Nova Scotia Carriage Co. ..... Kentville, N. S.
Nyberg Automobile Works ..... Anderson, Ind.

O

Oakland Motor Car Co. ..... Pontiac, Mich.

P

Packard Motor Car Co. ..... Detroit, Mich.
Paige-Detroit Motor Car Co. ..... Detroit, Mich.
Palmer & Singer Mfg. Co. ..... Long Island City, N. Y.
Paterson Wagon Works ..... Flint, Mich.
Peerless Motor Car Co. ..... Cleveland, Ohio
Pilot Motor Car Co. ..... Richmond, Ind.
Pope Mfg. Co. ..... Hartford, Conn.
Premier Motor Car Co. ..... Indianapolis, Ind.
Pullman Motor Car Co. ..... York, Pa.

R

Regal Motor Car Co. ..... Detroit, Mich.
Renault-Freres Selling Co. ..... New York City
Reo Motor Car Co. ..... Lansing, Mich.
Reo Motor Car Co. of Canada ..... St. Catharines, Ont.
Russell Motor Car Co. ..... W. Toronto, Ont.

S

Sayers & Scoville Co. ..... Cincinnati, Ohio
Schacht Motor Car Co. ..... Cincinnati, Ohio
Seagrave Co. ..... Columbus, Ohio
Selden Motor Car Co. ..... Rochester, N. Y.
Simplex Automobile Co. ..... New Brunswick, N. J.
A. O. Smith Co. ..... Milwaukee, Wis.
South Bend Motor Car Works ..... South Bend, Ind.
Spaulding Mfg. Co. ..... Grinnell, Ia.
Speedwell Motor Car Co. ..... Dayton, Ohio
Stanley Motor Car Co. ..... Newton, Mass.
Staver Carriage Co. ..... Chicago, Ill.
F. B. Stearns Co. ..... Cleveland, Ohio
Stegeman Motor Car Co. ..... Milwaukee, Wis.
Sternberg Mfg. Co. ..... Milwaukee, Wis.
Stevens-Duryea Co. ..... Chicopee Falls, Mass.
Stoddard-Dayton Co. (Maxwell) ..... Dayton, Ohio
Studebaker Corporation ..... Detroit, Mich.

T

The Hudhope Motor Car Co. ..... Orillia, Can.

V

Vandewater & Company ..... Elizabeth, N. J.
Velie Motor Vehicle Co. ..... Moline, Ill.

W

Warren Motor Car Co. ..... Detroit, Mich.
Wayne Works ..... Richmond, Ind.
Webb Co. ..... Allentown, Pa.
Westcott Motor Car Co. ..... Richmond, Ind.
White Company ..... Cleveland, Ohio
Wichita Falls Motor Co. ..... Wichita Falls, Tex.
Willys-Overland Co. ..... Toledo, Ohio
Winton Motor Car Co. ..... Cleveland, Ohio

Z

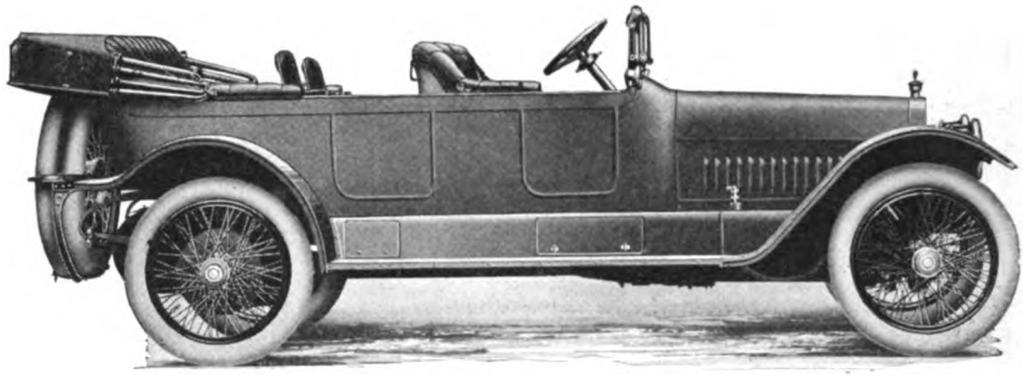
Zimmerman Mfg. Co. ..... Auburn, Ind.

WILLARD STORAGE BATTERY CO., Cleveland, Ohio

(41)

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New Stearns-Knigh



Stearns-Knight Six-Cylinder Seven-Passenger Touring Car
Equipped with Wire Wheels.

Left Hand Drive and Center Control
—a necessary feature of every high-grade car.

Centralized Steering Column Control
—not a cumbersome affair, but a neat arrangement, small and compact, just under the wheel.

Wire Wheel Option
— Rudge - Whitworth wire wheels furnished at slight extra expense.

Starting and Lighting
—the Gray & Davis system on all models.

Upholstery
—deep, thick upholstery. Tonneau luxuriously trimmed.

Design
—tapered hood, flush with cowl. Hood, cowl and body are unbroken surface.

Auxiliary Seats
—tonneau chairs exceptionally comfortable, with upholstered arms.

Equipment
—absolutely complete, including speedometer, Klaxon horn, electric lights, etc.

The new Stearns-Knight models are the most advanced in both mechanical design and detail finish that have ever been placed upon the American market.

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Models Are Ready

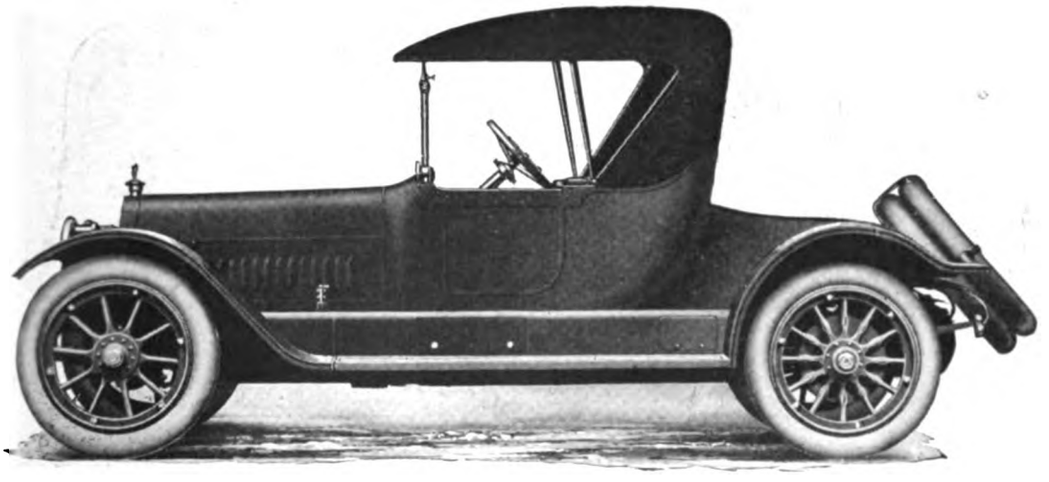
Prices range from $3750 to $5100 for the four-cylinder models, and from $4850 to $6200 for the six-cylinder product.

Models new this year include special four- and six-passenger cars, and Sedan and Coupe models, all furnished in either four- or six-cylinder chassis.

The F. B. Stearns Company

Cleveland, Ohio

Branches and Dealers in 125 Cities



Stearns-Knight Six-Cylinder Three-Passenger Roadster

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Endurance is the Supreme Test

Five times around the earth and still good—two hundred fifty million, five hundred forty thousand revolutions under load do not wear out

NEW DEPARTURE BALL BEARINGS



During the life of these bearings, five sets of bearings of another type were worn out and replaced. New Departure ball bearings work with the least friction and, therefore, give maximum wear and service—American made and guaranteed.

Write for interesting literature

The New Departure Manufacturing Company, Bristol, Connecticut

Western Branch, 1016-17 Ford Building, Detroit, Michigan

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Removal Notice

To meet the tremendous increase which there has been in the demand for MULTIBESTOS BRAKE LINING, STANDARD WOVEN BELTING and SOLID MULTIPLE HOSE FABRICS a new factory has been built and equipped for the manufacture of these products on a much larger scale.

This has made necessary the abandonment of our old plant at Worcester where we have done business for many years, but where facilities were proving more and more inadequate to meet the growth and expansion of our business.

In the new factory at Framingham will be found every modern feature tending to promote quality and economy of production, not only of our present lines but of extensions which embrace everything in the way of woven fabrics for mechanical purposes.

Under such ideal conditions for doing business we can ask a continuance of orders from old customers and an investigation from new prospects with the full confidence that we can serve them to their profit and entire satisfaction.

Standard Woven Fabric Company

Framingham, Massachusetts

August First
Nineteen Thirteen

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Jones Branches and Agencies Everywhere

There are Jones Branch Houses and agencies in all of the principal cities of the world.

These branches and agencies are managed by men who have had a wide experience. They are chosen for their ability to handle every transaction to the absolute satisfaction of all who deal with them. They are experts—men of education. They are gentlemen. And they have the finest speedometer built—to make this cycle of service complete.

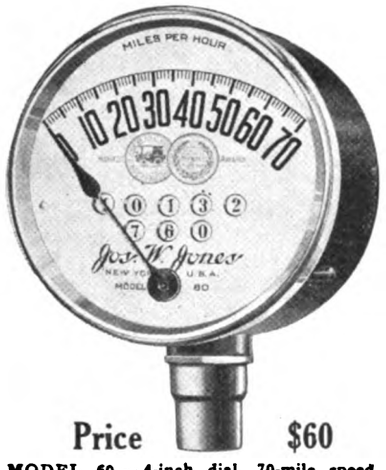


The New York Service Station

Simplicity is Vital

The New Jones is the simplest speed indicator. It has the fewest parts. It is built of the very best material offered for each purpose. We grind every part where exactness is needed to the one ten-thousandth part of an inch. With this simplicity and construction the Jones is the strongest speedometer. The accuracy we obtain in each instrument is thus permanently intrenched.

13-year-old Jones are as accurate now as the day they were placed on their first motor cars. Many today are on their fifth and sixth cars, giving perfect service. The New Jones will outlast many times over any old Jones ever built.



Price $60

MODEL 60—4-inch dial, 70-mile speed scale, with large, equally spaced figures. Low initial speed indication. Large Odometer figures, registering to 100,000 miles and repeat for the season, and 100 miles and repeat for the trip. Tenths of miles shown by red right hand figures. Instantaneous trip reset. Standard finish—black enamel with nickel trim, brass optional. Leather covered casing.

Motorists Want "Year 'Round" Speedometers

Men are now driving their cars the year 'round instead of merely in spring and summer. They want a speedometer that shows the true speed in every temperature. Jones advertising, reaching millions each month, is convincing them that the Jones does show it. We are explaining in every Jones ad all the advantages—the Steady Hand, that moves or rests without the least vibration—the Immovable Dial and Large Speed Figures, the easiest dial to read—the Correct indication from one mile per hour up to the highest speed each instrument shows—and the **absolute accuracy at all speeds, at all times, regardless of temperature.**

Let Us Send This Man

There's a man in our factory who has every Jones detail at his finger tips. He can answer your every question and give you every fact. He can take a Jones instrument apart and point out exactly and clearly every Jones advantage. He has the Jones Proposition to car manufacturers, and the authority to make it conform to your needs. In sending for the Jones books and naming a date convenient to you on which you can talk with this representative you are obligating yourself none whatever.



Price $125

MODEL 175—Same as model 75, with 3-in. Chelsea 8-day stem-wind and stem-set clock, and electric light.

THE JONES SPEEDOMETER, Broadway at 76th St., New York City

BRANCHES

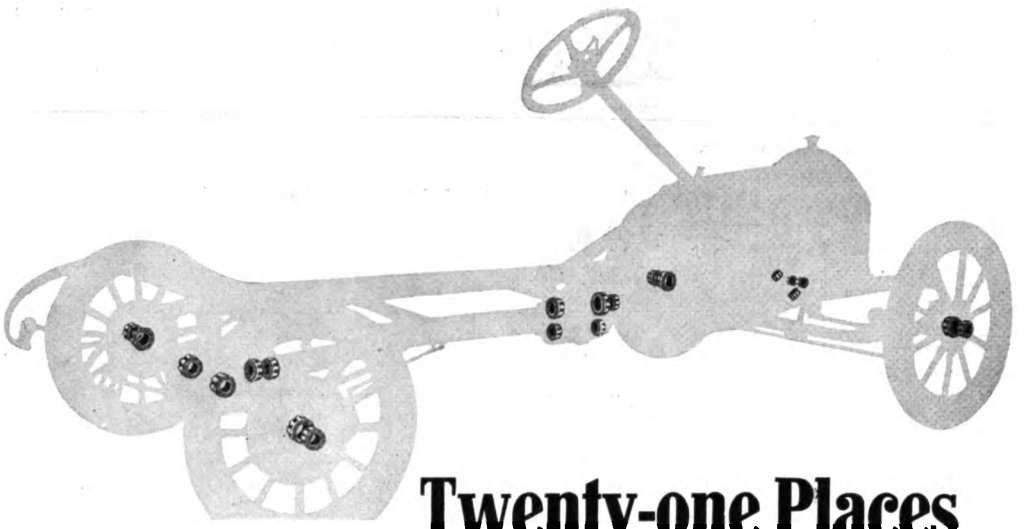
New York, Broadway at 76th St
Boston, 109 Massachusetts Ave.
Philadelphia, 1437 Vine St.
Chicago, 1439 Michigan Ave.
Baltimore, 217 W. Saratoga St.
Detroit, 872 Woodward Ave.
Buffalo, 29 Goodrich St.
Pittsburgh, 3201 Penn Ave.
Cleveland, 1965 Euclid Ave.
Charlotte, 220 Church St.
Memphis, Madison Av. and 4th St.
Minneapolis, 809 Hennepin Ave.
Omaha, 1026 Harney St.
San Francisco, 1436 Van Ness Ave.
Los Angeles, 466 W. Pico St.
Portland, Ore., 71 Seventh St.
Seattle, 1710 Broadway
Indianapolis, 1201 State Life Bldg.
Atlanta, 35 N. Pryor St.
New Orleans, Barrone & Perdido Sts.
Birmingham, 18 S. 20th St.
Denver, 1600 Broadway
Newark, N. J., 283 Halsey St.
Albany, N. Y., 133 Hudson Ave.

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Markt & Co. (London), Ltd., London
Markt & Co., Hamburg, Milan, Vienna, Barcelona
A. A. Kampfraath (Brussels), Ltd., Brussels, Amsterdam
Severin & Co., St. Petersburg
G. Bruggemann, Moscow Y. D. Rose, Paris
William D. Easy & Co., Sydney, Australia
The Target Motor Co., Melbourne, Australia
C. E. Hgilvie, Manila, P. I.
Adams, Ltd., Christchurch, New Zealand
Markt & Schaefer Co., Rio de Janeiro, Brazil; Buenos Aires, Argentine; Mexico City, Mex.; Habana, Cuba; San Juan, P. R.

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"Bower Saves Power"



Twenty-one Places Where "Bower Saves Power"

The real power of an automobile is not that of its motor. It is the amount available after friction has taken its toll.

There are 17 principal places in an automobile where friction robs it of its power. There are besides four places where the power of the driver in steering may be wasted.

Friction is the thief of power.

Location of Bower Bearings

4 in Front Wheels
4 in Rear Wheels
2 in Differential Gear
2 in Propeller Shaft
5 in Transmission
4 in Steering Gear
21

Bower Roller Bearings are Power's Guardian because through their original design, a maximum diameter of roller is permitted, the rollers are self-aligning and the bearing never needs adjustment. These are exclusive features.

Bower Roller Bearing Co.
DETROIT, MICH.

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MORE EFFICIENT SALESMANSHIP

is generally admitted to be

THE GREATEST NEED OF THE TRADE

MOTOR WORLD

is doing its part to render the need less acute by

"Improving the Breed of Salesmen"

One of its most recent efforts in that direction is the

Offer of Four Cash Prizes

$30 — $20 — $15 — $10

for the best four articles conforming to the title

"My Best Sale; How It Was Made"

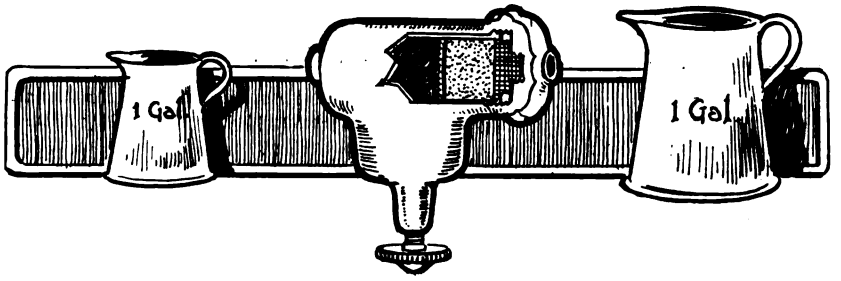
The competition is open to everyone who ever sold a car, truck or accessory, but all articles submitted must be received prior to September 1st, next. Non de plumes may be employed, if desired.

If ever YOU made a sale of which you are particularly proud, now's a good time to prove it.

All Contributions to be Addressed:
Contest Editor, Motor World, 1600 Broadway, New York

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Power in Fuel



The power you get from a gallon of gasoline ordinarily and the power you would get from a gallon of gasoline filtered through an Ellis Gasoline Purifier is about in proportion to the measures shown in the illustration.

No amount of skillful carburetor adjustment can ever make a gallon of gasoline produce 100% of its power unless the water or sediment, ever present in commercial gasoline, is eliminated. The fault is more often in the gasoline, not in the carburetor. The remedy should be applied to the gasoline before it reaches the carburetor.

The Ellis Gasoline Purifier is simple and efficient. Its real value is found in the trouble it prevents as well as in the increased efficiency it imparts by refining the fuel. It is attached simply and easily and requires only passing attention—that of draining off water and sediment it collects. In design the Ellis Gasoline Purifier takes advantage of the greater specific gravity of water and sediment to that of gasoline. As the gasoline passes through the fine screens and felt filter pads, all sediment and water is caught and drops into a chamber on the underside of the appliance where it may be removed at the rider's convenience.

Sells Retail at $3.50, Prepaid

Ellis Gasoline Purifier

is one of the best selling motorcycle accessories on the market. Motorcyclists have felt the need of it and buy it readily once its working is explained to them. Carburetor trouble leads to many other kinds of trouble. It is a vital part of a motorcycle and one of the least understood parts. The ordinary carburetor will give good satisfaction when used in connection with an Ellis Gasoline Purifier. Write for further particulars. Dealers are invited to get our agency proposition.

NATIONAL SALES CO., Sole Manufacturers 45 Milk St., Boston, Mass.

DEALERS

The Ellis Gasoline Purifier is the final remedy for carburetor troubles. It will, in a large degree, eliminate the troubles which cause an automobile or a motorcycle to give a low mileage per gallon of gasoline.

Automobile owners and motorcyclists are being told the money-saving and trouble-saving advantages of the Ellis Gasoline Purifier. The above is an example of how we are creating a demand on the part of motorcyclists. The practical value of the Ellis Gasoline Purifier, exploited by our aggressive advertising campaign, makes it well worth your while to send for full information and particulars. Don't wait.

Send for Our Dealer Proposition Today

NATIONAL SALES CO., Sole Manufacturers 45 Milk St., Boston, Mass.

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Sell METZ Cars and build up a line of satisfied and enthusiastic customers who will send their friends to you.

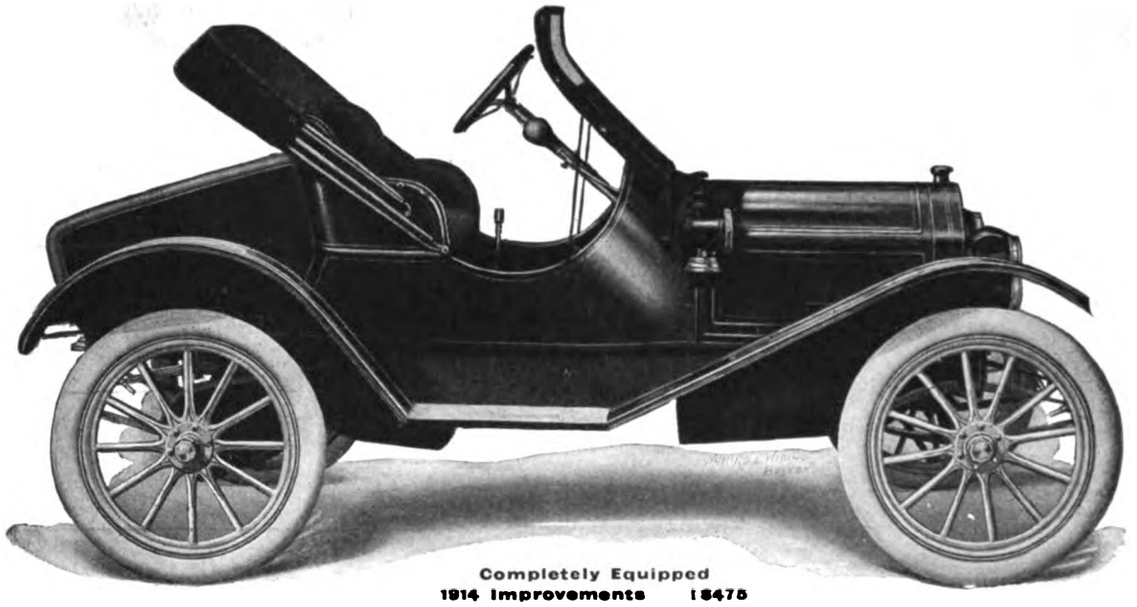
METZ "22"—$475

Winner of the Glidden Tour
and both the Glidden and Minneapolis News trophies, is the

Lowest Priced Car on the Market

The Proved Efficiency Car

We Want a Representative to Handle These Cars in Every City and Town. Write Us for Territory and Liberal Terms.



Completely Equipped
1914 Improvements $475

GEARLESS TRANSMISSION

No Clutch to Slip ***No Gears to Strip***

In the Glidden Tour, which started at Minneapolis on July 11th and ended at Glacier National Park on the 19th, the team of three METZ cars was the ONLY team that held a PERFECT record for the ENTIRE EIGHT DAYS. They were pitted against cars costing from five to ten times as much, yet their nearest competitor made a perfect score for only the first two days.

The METZ "22" was last to leave the noon control on the final day of the race, passed all the cars ahead, and when ten miles from the goal caught the pace-maker and crowded him over the last mountain range, finishing with twenty minutes to spare!

The METZ "22" is a roadster car of the torpedo semi-enclosed type, left-hand drive, center control. It makes from 5 to 50 miles per hour on the high speed, travels from 28 to 32 miles on ONE gallon of gasoline, 100 miles on ONE pint of lubricating oil, and from 10,000 to 12,000 miles on a single set of tires.

It is the most economical car on the market to operate. Climbs hills as fast as any regular stock car made. Takes many hills on the high speed that are steep enough to force the big touring cars to drop back on low speed.

Equipment—4-cylinder 22½ h.p. water-cooled motor, Bosch magneto, windshield, extension top with cover slip and curtains, full elliptic springs all around, standard artillery wheels, best quality Goodrich clincher tires, five lamps and gas generator, horn, pump, and tool outfit.

Built to carry either single or double rumble seat, if desired. Its gearless transmission entirely does away with aggravating and expensive "gear troubles."

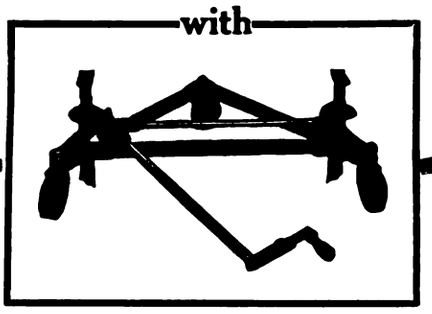
Reasonably prompt deliveries. Write for dealers' terms and new illustrated catalog "B."

METZ COMPANY - - Waltham, Mass.

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Increase Your Profits

with



Weaver Auto Twin-Jacks

THERE is not an hour in the day that an equipment of Weaver Auto Twin-Jacks won't save money for any garage owner.

Think what it means for one man to be able to manipulate the heaviest car in your garage without assistance. Unloading, washing, testing breaks, shifting position in repair shop, garage, or showroom, supporting dismantled cars undergoing repairs—in fact there is no requirement in the garage which these jacks will not meet.

All the service of

A TURN TABLE—TRANSPORTER
LIFTING JACKS—TIRE RESTS

at the cost of one week's wages of one of your helpers. Can you beat it?

Ball and Roller Bearing

Made of malleable iron and steel and equipped with ball and roller bearings throughout. Weight, EACH 47 LBS., capacity, EACH 4,000 LBS., wheel base 34 inches.

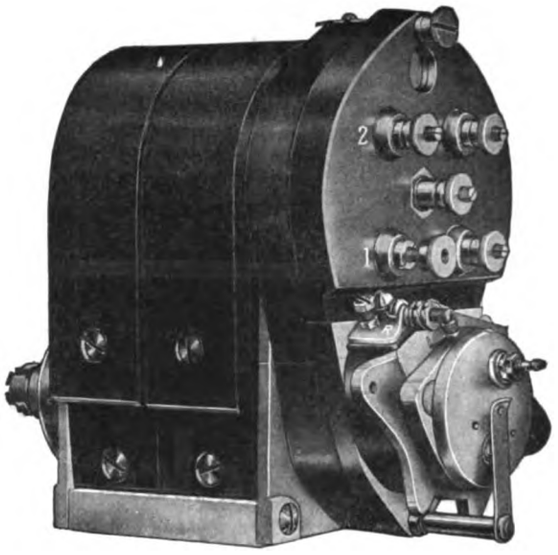
2 for $20.00

(One for each axle)
Liberal Discount to Dealers

WEAVER MANUFACTURING CO. 2167-71 South 9th Street SPRINGFIELD, ILL.



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Making good is a habit with Eisemann products. Witness the fact that 39 truck makers insist upon Eisemann ignition to help them make good. First of all in truck manufacture comes dependability. That's why Eisemann ignition is prevalent on the leading trucks. Then in turn is efficiency, simplicity snd durability—all additional features of Eisemann design and construction. And the spark?—well, it's so hot and fat that a quarter turn is sufficient to start any motor.

EISEMANN

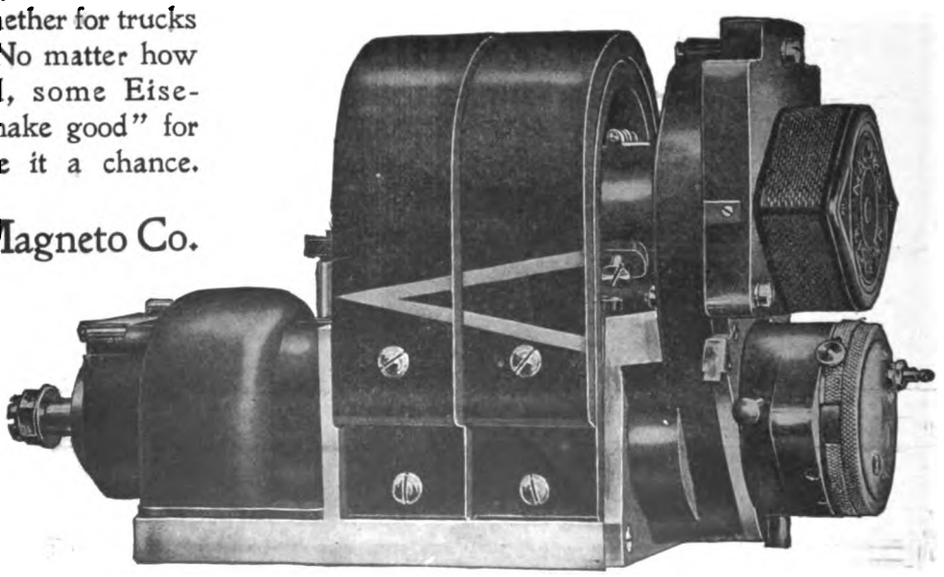
Remember, too, that there is an Eisemann ignition system to meet every requirement—whether for trucks or for pleasure cars. No matter how large or how small, some Eisemann system will "make good" for you if you'll but give it a chance.

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FEDDERS RADIATORS

FOR some years to come, at least, the automobile engineer's problem, in so far as motors are concerned, will deal not with the creation of a radically different type of motor, but in increasing the efficiency, economy and smooth running power of accepted standard types.

Probably no other part of the automobile affects the perfect working of a motor more than its cooling system.

Fedders standard radiators have always been recognized as the highest type of cooling efficiency and as embodying the best of materials and methods of radiator construction.

We are always glad to cooperate with your engineers on radiator problems. Our facilities enable us to serve your needs promptly, either in standard Fedders Radiators or in radiators built to your own design.

The use of copper cores and Fedders methods of construction will add materially to the efficiency of your cooling system. Write us.

The Fedders Manufacturing Works
Buffalo, New York

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Patience
Please!

Maxwell
1914
Announcement

Next
Week!

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This monogram stands for all you can ask in a motor car

You Can Buy

an automobile for less than the Chalmers price, but you cannot get Chalmers features and quality in that automobile.

We mean that. And we can prove it. For any less than the Chalmers price you can't get, for instance, a motor of equal quality. Big and sturdy, quiet but powerful, this motor delivers to the driving wheels its full rated horsepower—day in, day out, summer and winter. It hangs on.

You can't get, for less than the Chalmers price a four forward-speed transmission and all ground gears. Four forward speeds mean utmost flexibility. All ground gears mean freedom from noise, friction, wear. Insist on a four forward-speed transmission. Once you have used this wonderful improvement you will never be satisfied to drive a three-speed car.

For less money than the Chalmers price, you can't equal Chalmers convenience—such conveniences, for example, as Chalmers reliable self-starter; electric lighting system; demountable rims; carburetor dash adjustment.

Comfort equal to that of the Chalmers you can't possibly secure for less than the Chalmers price. In fact, we doubt if you can get the same complete restfulness in any car at even higher prices. Luxurious cushions and upholstery; long wheelbase; big wheels and tires; long, flexible springs—make Chalmers riding a delight.

Beauty, style, elegance—no car at any price **surpasses** the Chalmers in these qualities. Certainly you cannot **equal** the Chalmers in these respects for less than the Chalmers price.

Chalmers quality is inbuilt in Chalmers cars—the result of Chalmers manufacturing methods. Chalmers cars are **manufactured** cars. They are built in our own shops by Chalmers men, under the most vigorous Chalmers inspection (one inspector to every 13 workmen). No car at **any** price contains better material, no more careful, painstaking workmanship.

For **less** than the Chalmers price you inevitably get less than the Chalmers quality.

It pays to buy good quality at the start. It pays to buy a Chalmers car—a quality car at a medium price.

Don't try to "save" money at the cost of permanent satisfaction.

See the Chalmers cars at our dealer's and let him tell you more about the Chalmers quality cars.

Chalmers Motor Company, Detroit, Mich.

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EXTRA!



The "Oilproof" Quality

—hitherto the exclusive and remarkable extra-service feature of Vacuum Cup Tires, is now extended to our entire output of Smooth Casings, and these will hereafter be known as

PENNSYLVANIA Oilproof SMOOTH TREAD TIRES

This costly improvement will carry with it a 500-mile increase in the mileage guarantee, from 3,500 to 4,000 miles, coincident with a relative increase in the guarantee of Vacuum Cup Tires from 4,000 to 4,500 miles.

Our manufacturing application of this improvement dates back to April 1st, so that the new guarantee is retroactive on all casings shipped on or after that date.

Thus our whole production of Automobile Casings is removed from the field of ordinary competition and the brand "Pennsylvania" becomes completely distinctive of a standard of service unique and unapproached in other tires.

That the oilproof feature is more than equivalent to 500 miles additional service, the past year's carefully observed records of Vacuum Cup Tires have amply proved.

The fact is now well known among experts that the production of the Oilproof quality is the most costly of all forms of tire construction, since only special grades of the finest and purest new rubber will "process" successfully with the oilproofing minerals, themselves an expensive item, and the entire operation requires unusual facilities.

All dealers should immediately make an important point of the foregoing fact, inasmuch as the addition of the Oilproof quality represents a very considerable extra manufacturing cost as well as an even greater extra value in the shape of longer mileage service.

PENNSYLVANIA RUBBER COMPANY, JEANNETTE, PA.

Pittsburgh, 505 Liberty Avenue — Cleveland, 1837 Euclid Avenue — Detroit, 254 Jefferson Avenue — Chicago, 1004 Michigan Avenue
Minneapolis, 34 S. 8th St. — Kansas City, Mo., 514 E. 15th St. — Omaha, 215 S. 20th St. — Seattle, Armour Building

PENNSYLVANIA RUBBER COMPANY OF NEW YORK
New York City, 1700 B'way. Dallas, 2111 Commerce St. Boston, 149 Berkeley St.

PENNSYLVANIA RUBBER COMPANY OF CALIFORNIA
San Francisco, 512-514 Mission St. Los Angeles, 930 S. Main St.

An Independent Company with an independent selling policy.

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EXTRA!

The "Oilproof" Quality

—hitherto the exclusive and remarkable extra-service feature of Vacuum Cup Tires, is now extended to our entire output of Smooth Casings, and these will hereafter be known as

PENNSYLVANIA Oilproof SMOOTH TREAD TIRES

This costly improvement will carry with it a 500-mile increase in the mileage guarantee, from 3,500 to 4,000 miles, coincident with a relative increase in the guarantee of Vacuum Cup Tires from 4,000 to 4,500 miles.

Our manufacturing application of this improvement dates back to April 1st, so that the new guarantee is retroactive on all casings shipped on or after that date.

Thus our whole production of Automobile Casings is removed from the field of ordinary competition and the brand "Pennsylvania" becomes completely distinctive of a standard of service unique and unapproached in other tires.

That the oilproof feature is more than equivalent to 500 miles additional service, the past year's carefully observed records of Vacuum Cup Tires have amply proved.

The fact is now well known among experts that the production of the Oilproof quality is the most costly of all forms of tire construction, since only special grades of the finest and purest new rubber will "process" successfully with the oilproofing minerals, themselves an expensive item, and the entire operation requires unusual facilities.

All dealers should immediately make an important point of the foregoing fact, inasmuch as the addition of the Oilproof quality represents a very considerable extra manufacturing cost as well as an even greater extra value in the shape of longer mileage service.

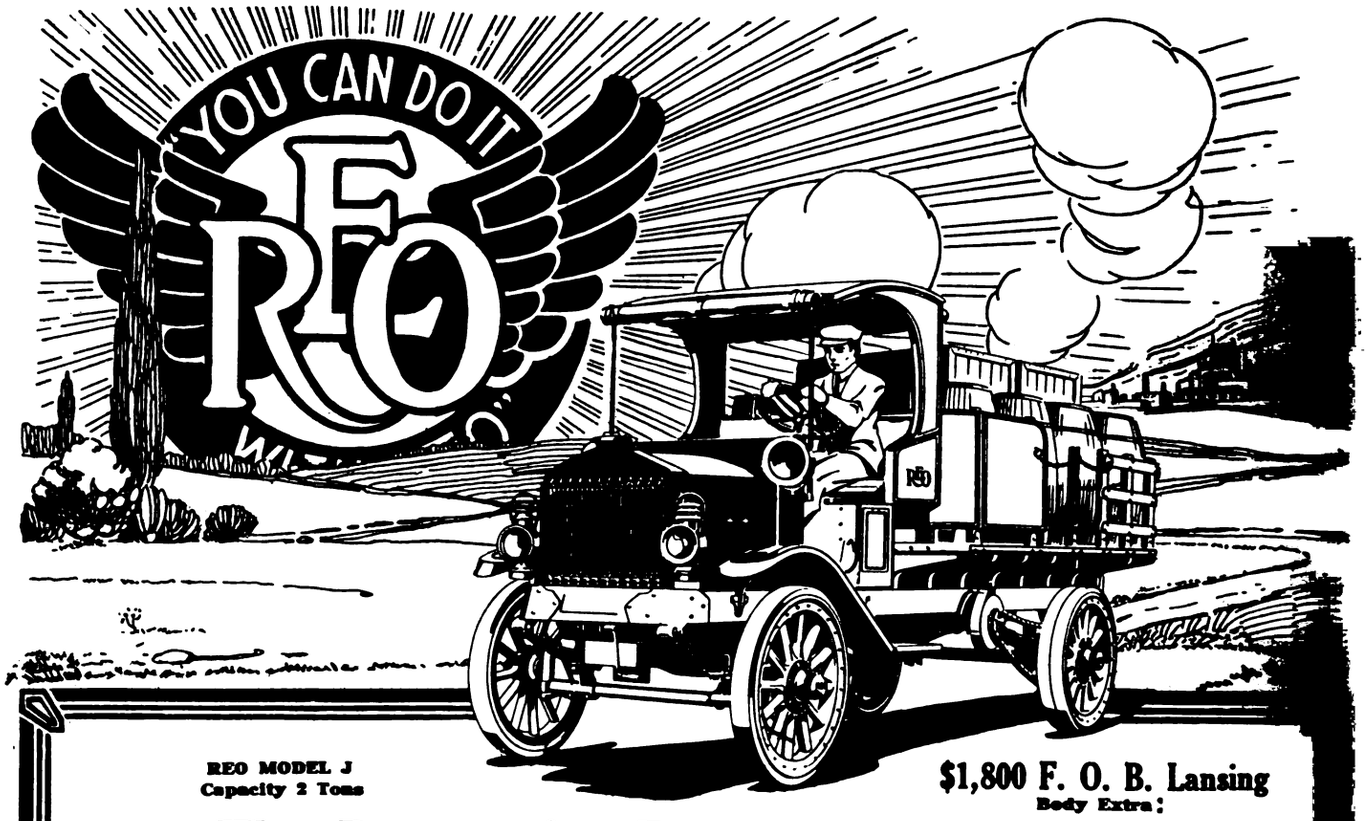
PENNSYLVANIA RUBBER COMPANY, JEANNETTE, PA.

Pittsburgh, 805 Liberty Avenue — Cleveland, 1321 Euclid Avenue — Detroit, 250 Jefferson Avenue — Chicago, 1004 Michigan Avenue
Minneapolis, 34 S. 8th St. — Kansas City, Mo., 510 E. 15th St. — Omaha, 215 S. 20th St. — Seattle, Armour Building

PENNSYLVANIA RUBBER COMPANY OF NEW YORK — **PENNSYLVANIA RUBBER COMPANY OF CALIFORNIA**
New York City, 1700 Broadway. Dallas, 2111 Commerce St. Boston, 149 Berkeley St. San Francisco, 512-514 Mission St. Los Angeles, 330 S. Main St.

An Independent Company with an independent selling policy.

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REO MODEL J
Capacity 2 Tons

$1,800 F. O. B. Lansing
Body Extra:

The Dawn of a Better Business Day

Modern business gets its profit out of what it saves. Even small economies amount to big annual dividends. If you can show your customer how to cut delivery costs with the REO MOTOR TRUCK, you have shown him how to increase his profits.

That is the way over 1,100 dealers are selling REO MOTOR TRUCKS. With a motor truck like the REO, it is an easy matter for you to make many sales in your territory.

Every Reo Truck is a Money Maker for Its Owner

REO efficiency is tried, tested and proven. Read, for example, the following record of a single day's performance of a REO MODEL J 2-TON TRUCK owned by the Schramm Grocery Co., Flat River, Mo.

"Five round trips in one day to four outlying towns, average load 4,096 lbs. Total mileage 62. Gasoline consumed 8 gallons. On these roads twenty miles with a two-ton load would be a long day's work for a team of horses."

8 gallons of gasoline at 20c.	$1.60
Tire cost, 60 miles at 2c.	1.20
Driver's wages, one day	2.50
Depreciation at $650 per year	2.00
Repairs and overhauling at $150 year	.50
Interest on investment	.35
Fire insurance	.15
Oil and grease	.40
Total daily expense	$8.70

Thus this truck did the work of three teams, which with wagons and harness would cost $2,100. The daily cost was only $8.70 while three teams would cost for drivers alone $7.50.

A Simple Way to Judge Truck Values

You are, of course, sufficiently versed in technical values to judge of the unusual importance of the many exclusive features that REO experience and organization have enabled us to put into this wonderful truck.

The impregnable armored frame, the REO sectional radiator, with its 24 independent, interchangeable units, the left side drive and center control, the REO hydraulic speed governor, the famous REO motor cushioned against vibration and road shocks, to mention but a few points of obvious superiority.

But to anyone not technically versed in motor car construction, here is a simple statement of business fact: The average price of 54 competing trucks is $2,701, a clear saving of nearly $1,000 in favor of the REO. What does our competitor offer you that is worth that extra $1,000?

If you are a live motor car dealer, looking for the right motor truck to sell in your vicinity, write us. We have some good territory still open.

REO MOTOR TRUCK COMPANY, Lansing, Mich.

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INSIST UPON THE RED TAG



ACCEPT NO SUBSTITUTE FOR PLATINUM POINTED

Mosler Spit Fire Plugs

Genuine Platinum Point Guaranteed Forever

Energetic Ignition Greater Power

A. R. MOSLER & CO. P. O. Box "M," MT. VERNON, N. Y.

503

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THE railroads do not buy their oil by the gallon—they buy it by the mile. The reason is obvious.

The automobilist is apt to think that the selection of a cheap oil is simple. It is the reverse. It is complex.

Into the matter enter such questions as the relation between miles travelled and gallons consumed, and the relation between cost and up-keep and cost per gallon per mile.

Although many different brands of oil are being called to your attention by extravagantly worded advertisements,

INVA

OI



Clearest



FACTORIES:
NEW YORK.....92 Pearl St.
PHILADELPHIA.....113 Arch St.

BRANCHES:
BOSTON.....284 Columbus Ave.
WASHINGTON, 3627 New Hampshire Ave., N. W.
PHILADELPHIA, 113 Arch St. and 719 N. Broad St.

INVADER
Lessees of Chas
Main Office: 81 Broad

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it is a well known fact that the scarcity and increased cost of Pennsylvania Crude has lowered the gravity and consequently the quality of lubricating oil, just as it has lowered the gravity and quality of gasolene. This parallel is exact.

Invader Oil is one of the few high gravity, one hundred per cent. Pennsylvania Oils now being marketed and its use will prolong the life and efficiency of any gasolene motor. It is the cheapest because it is the most efficient. It costs less in dollars and cents per thousand miles than any other oil made.

DER

LS



Cleanest

OIL COMPANY

F. Kellom & Co.

Street, New York

TERRITORIAL AGENTS:

Boyer-Campbell Co.	Detroit, Mich.
Beck & Corbitt Iron Co.	St. Louis, Mo.
Motor Car Supply Co.	Chicago, Ill.
Lee Hardware Co.	Salina, Kan.
American Lubricating & Supply Co.,	Kansas City, Mo.
James Bailey Company	Portland, Me.



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FISK Tubes



Fisk Inner Tubes Are Not *Simply* Tubes

They Are Dollars in the Car Owner's Pocket because they Greatly Reduce His Tube Expense.

FISK TUBES ARE PERFECT. There is no guess work, no chance about them. We have doubled the service and halved the expense for thousands of tube buyers. ***We can do it for your customers.*** Our confidence is based on a long record of actual accomplishment.

Fisk Tubes are pure gum tubes, made of the finest Pure Para Rubber vulcanized by the aid of sulphur to exactly the right degree to produce long life. You cannot take one of them in your hand without appreciating its quality from the texture.

Fisk Tubes have an original splicing which makes thin spots impossible. They are never porous. The construction is such that no imperfection can be present to develop a slow, but constant leak of air.

Send to Dept. 23 for Sample Section of Fisk Tube. It Tells the Story of Fisk Quality.

Fisk Tubes are built regardless of cost. The only economy which is recognized is that which we can ultimately offer the tire user. Only a tube built like the Fisk can give FISK SERVICE.

The Fisk Rubber Company

Factory and Home Office **Chicopee Falls, Mass.**

DISTRIBUTORS

THE FISK RUBBER COMPANY OF N. Y.

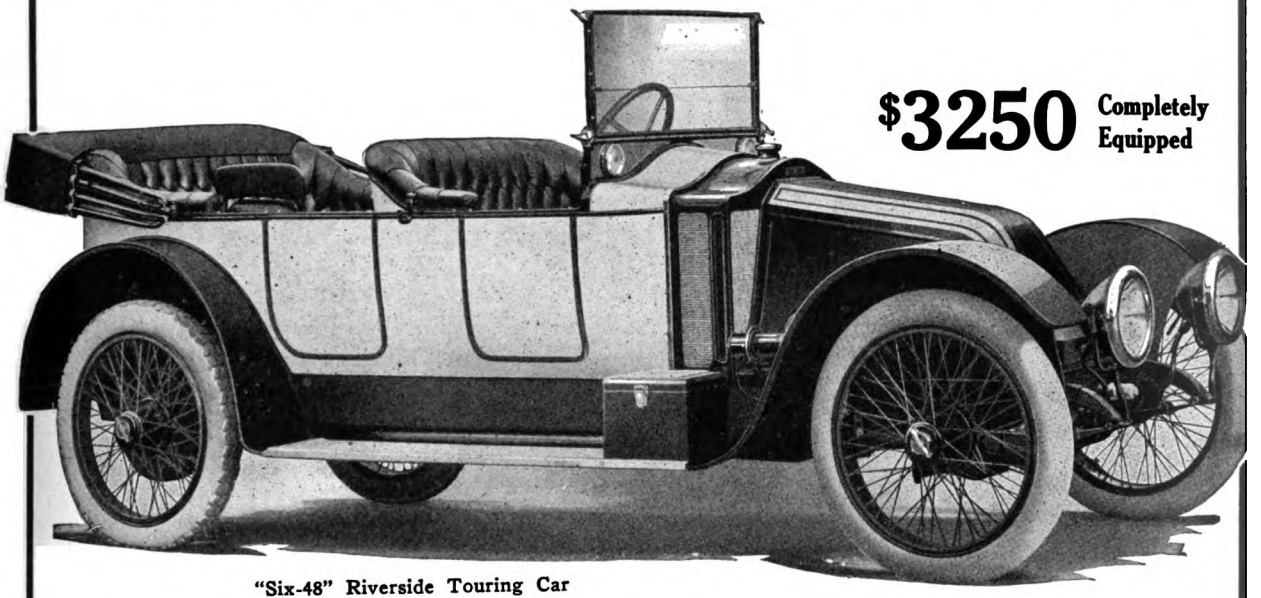
BRANCHES IN 41 CITIES

FISK PNEUMATIC TIRES ARE GUARANTEED WHEN FILLED WITH *AIR* AT THE RECOMMENDED PRESSURE AND ATTACHED TO A RIM BEARING EITHER ONE OR BOTH OF THE ACCOMPANYING INSPECTION STAMPS. WHEN FILLED WITH ANY SUBSTITUTE FOR *AIR* OR ATTACHED TO ANY OTHER RIMS THAN THOSE SPECIFIED, OUR GUARANTEE IS WITHDRAWN

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1914 "SIX-48" KEETON

THE COOLEST CAR FOR SUMMER TOURING



$3250 Completely Equipped

"Six-48" Riverside Touring Car

IN the hot summer months the front compartment in the ordinary type of fore-door car is excessively warm, causing great discomfort to the occupants. This is due to the method of drawing the air through the radiator and forcing it back over the engine and out underneath the front floor boards. This hot air keeps the front compartment at an almost unbearable degree of temperature. Many makers have tried to overcome this by using ventilators, hinging the doors so that they are partly open—tilting the windshield back—and many other makeshifts that are only partly successful.

The front compartment of the Keeton is always at an even cool temperature. The hot air is forced out through the sides of the radiator **away** from the car. There is a draft of **cool air** under the front floor boards at all times.

The French type of the Keeton with its sloping hood also gives the driver a better view of the road directly in front of the car. This feature makes the Keeton more easily handled on rough roads or in night driving where it is imperative to get an unobstructed view of the road immediately in front of the car.

The long wheel base—wire wheels with big tires—long flat springs of special alloy spring steels—the balance of weight gained by the dash location of the radiator—the light weight—smooth running 6-cylinder motor with its great freedom from vibration, and the luxuriously roomy body all combine to insure an ease and comfort that is unequalled.

Literature on Request.

Keeton Motor Co.

Lawton and Buchanan Aves. **Detroit, Michigan**

Keeton Motors, Limited, Brantford, Canada

KEETON
DETROIT, U.S.A.

Important Features Brief Specifications

Electric starting.
Full electric light equipment.
Small 3¼-inch bore—long 5½-inch stroke.
Cylinders cast en bloc, large valves.
All moving parts completely enclosed.
Exceptionally powerful and flexible.
The most efficient cooling system in use today.
Radiator at rear of motor in proper and protected position.
Four speeds forward in transmission.
Direct on 3rd—geared up on 4th.
Left side drive—right hand control.
Wire wheels—60% more tire mileage.
Extra detachable wire wheel.
Long 136-inch wheel base—long springs, special alloy spring steel, nearly flat under load.
Chrome Vanadium Gears and Shafts on imported annular bearings.
Pressure gasoline feed.
Very roomy and comfortable bodies.
Best of foreign practice adapted to American road and touring conditions.

Complete Equipment

Electric starting and lighting system with 12½-inch headlights, dash lamps and tail lamp with license holder; 80-mile speedometer and eight-day clock combined with electric light; lamp for changing tires at night, with extension cord; dynamo electric horn; robe and foot rails; silk mohair top, with self-contained folding curtains and slip cover; double acting and rain vision wind shield; option of wire wheels with extra detachable wire wheel or wood wheel with extra demountable rim; wheel or tire carrying irons; full set of tools; pump; jack and tire repair outfit; all touring bodies have two auxiliary seats.

Three Excellent Models

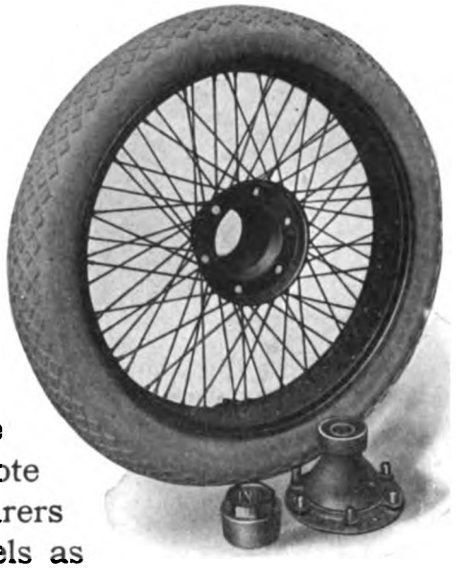
Prices F. O. B. Detroit.

Riverside Touring Car, 7 passenger, completely equipped	$3250
Meadowbrook Roadster, completely equipped	$3250
Tuxedo Coupe, completely equipped	$3500
Chassis without tires or rear guards	$2500

Booklet on Request.

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McCUE



IN practically every noteworthy contest of speed and endurance this year, both here and abroad, wire wheels have carried the winners to victory.

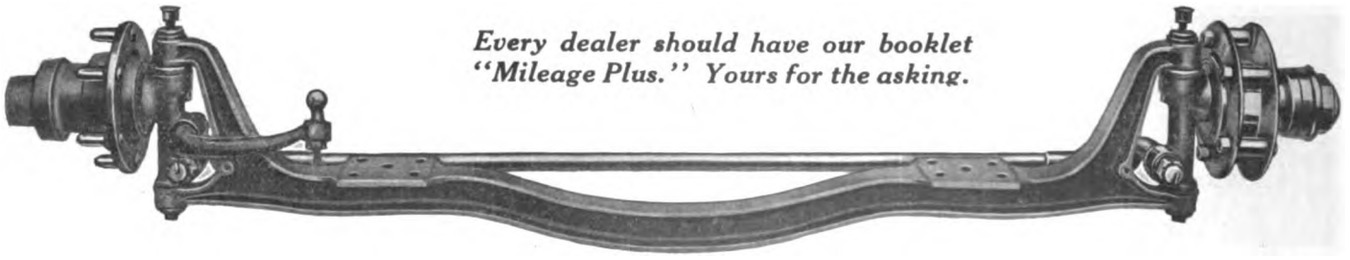
As the announcements of new series of cars are published note the increasing number of manufacturers who advertise the adoption of wire wheels as equipment on their improved cars.

It is somewhat far-fetched to assume that wire wheels have any great amount of bearing upon a racing car's speed. Wire wheel superiority is based upon a far more important fundamental than speed.

It is equally absurd to think manufacturers are adopting wire wheels as the result of a fad. They have a real basic reason for doing so.

McCue Wire Wheels are built according to the mos Spokes, made by the Standard Co. of Torrington, Conn McCue Wire Wheels a superior product from ever facilities are the best in America. The McCue outpu

The McCue Company



Every dealer should have our booklet "Mileage Plus." Yours for the asking.

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WIRE WHEELS & AXLES



IT is wire wheel tire economy that appeals to the racing driver, a tire economy that means a saving in time and trouble as well as a greater factor of safety. Better service and a consequent decrease in a car's upkeep cost, because of this added tire mileage, is the manufacturer's fundamental reason for wire wheels.

Can you think of any stronger reasons why you should boost wire wheels to your customers---wire wheels as the basis of all real car service at a minimum upkeep expense. It is the strongest argument you can use in this day of motor car standards.

It is right up to you, Mr. Dealer. Don't wait until a rival dealer gets the jump on you. Insist that your allotment of cars come wire wheel equipped.

Any particular information you want we will gladly give you direct.

advanced ideas of wire wheel design. Standard ⓢ of special drawn carbon steel are used. Not only are viewpoint but McCue manufacturing methods and is fast reaching 1,000 wire wheels per day.

Buffalo - New York



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Hartford CONE CLUTCHES

Cone clutches for pleasure cars and commercial trucks



Standard Hartford Cone Clutch Unit Complete with Universals.

Sizes for various motor horse-power and load requirements

HARTFORD CONE CLUTCHES vary in size according to the requirements of the cars or trucks on which it is intended they be used.

It has been common to designate clutch sizes in the same way. The relation between a motor and its load is commonly expressed by horse-power. Some of the Hartford Cone Clutch sizes are M500—25 H. P., M600—45 H. P., M700—60 H. P., etc., as the case may be.

Our experience as clutch specialists in the past invariably has proven valuable in selecting the size clutch best adapted to the requirements of the manufacturers with whom we have done business. By co-operating intelligently with their engineers, a great deal of time and expense has been saved. The engineer knows his requirements; we know the capabilities of various Hartford Clutches. Subsequent tests have always borne out such recommendations.

Clutch requirements in the commercial car field differ considerably from pleasure car clutch practice. This is natural. A new set of conditions arises and while they in no way affect the superiority of the cone type clutch, require study to be handled properly, and here again our experience as clutch specialists has been invaluable to truck manufacturers.

Our truck business is growing rapidly—and better still in a satisfactorily, consistent manner.

Hartford Auto Parts Company
HARTFORD, CONN.

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Lancia

AMERICA'S FAVORITE FOREIGN CAR SOLD AT AMERICAN PRICES

Lancia cars, made in Europe, offer the American buyer every European point of superiority in material, engineering features, workmanship, design and finish—and it is conceded that car building methods which obtain on "the other side" are years in advance of American methods.

And American Dealers can sell Lancia cars at American prices.

You, Mr. Dealer, know that limited quantity production insures the ***personal attention*** of every man engaged in the building. Lancia production is typically European because it ***is*** limited. Here are no American cut and dried operations that produce quantity at the heavy expense of quality.

Lancia dealers use these arguments as the basis for selling arguments.

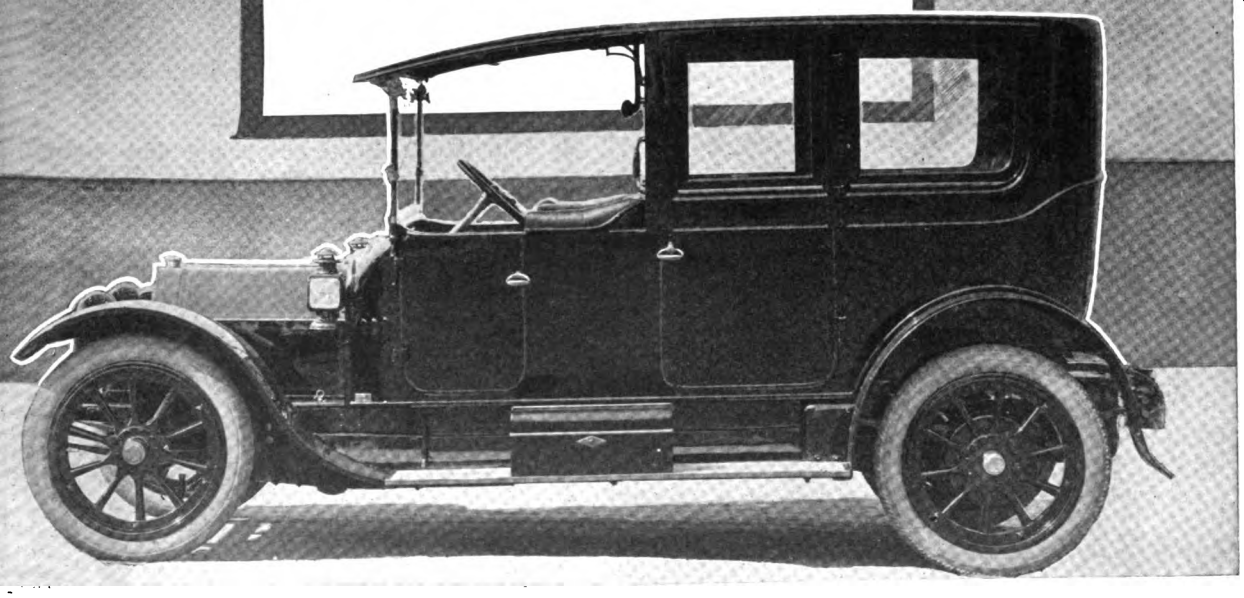
Car wise buyers who want European automobiles are quick to grasp and act upon them.

There is some choice territory awaiting dealers who are looking for that ***different and better car.*** Are you such a dealer?

ADAMS-LANCIA COMPANY

238 West 58th Street New York City

DEALERS WANTED



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Your Customers Want Soot-Proof Spark Plugs

There is a greater and steadier demand for Soot-Proof Plugs than for any other.

They have been on the market longer and motorists have come to rely upon them when others failed to live up to their advertised qualities.

Soot-Proof Plugs are warranted not to short-circuit or leak. They are built with a double chamber and have three times the resistance of the ordinary plug—hence the hottest spark a current is capable of.

Soot-Proof Plugs are self-cleaning and prevent all ignition troubles such as balks, weak spark, carbon, etc., in so far as plugs are concerned.

Why not sell the best known and most reliable spark plug. Going with popular demand is better than bucking against it.

C. A. MEZGER, Inc.

15 Canal Place
New York

Philadelphia, 1427-33 Vine St., Petry-Cassidy, Inc.
Chicago, 1430 Michigan Boulevard, F. E. Sparks.
Detroit, Ford Building, H. E. Butcher.
Portland, 329 Ankeny St., Hughson & Merton.
Seattle, 924 E. Pike St., Hughson & Merton.
San Francisco, 530 Golden Gate Ave., Hughson & Merton.
Los Angeles, 1229 South Olive St., Hughson & Merton.



Saved!

Weed Tire Chains enable you to safely make sharp turns and quick stops when a momentary loss of control means loss of life.

The above picture illustrates one of the numerous situations in which you may be placed during bad road weather — when suddenly someone appears directly in your path and in a fraction of a second you must make a sharp turn and apply the brakes. It is then you require a firm unfailing grip on the road which can only be obtained by equipping ***all*** tires with

Weed Anti-Skid Chains

The Only Device that Absolutely Prevents Skidding

The memory of one accident deters future enjoyment in the use of a car. Why run the risk of such accidents and why forfeit the pleasures of motoring ***forever after, when safety can surely be yours by equipping all four tires with WEED CHAINS?***

WEED CHAINS cannot injure tires because "they creep." Easily put on in a jiffy without the use of a jack or other tools. Directions packed with every pair.

Universally Used

WEED CHAINS are generally regarded as the most profitable accessory for the automobile Dealer — Extensively Advertised — Easily Handled — Quick Sellers — No Dead Stock — No Dull Seasons — Liberal Profits — Satisfaction Guaranteed.

Attractive, Decorative, Convincing Hangers regularly supplied to Dealers upon request

At all dealers selling Auto Supplies

Weed Chain Tire Grip Co., New York

Manufactured in Canada by
DOMINION CHAIN CO., Limited, 137 McGill St., Montreal, Can.

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Kelly - Springfield

Automobile Tires

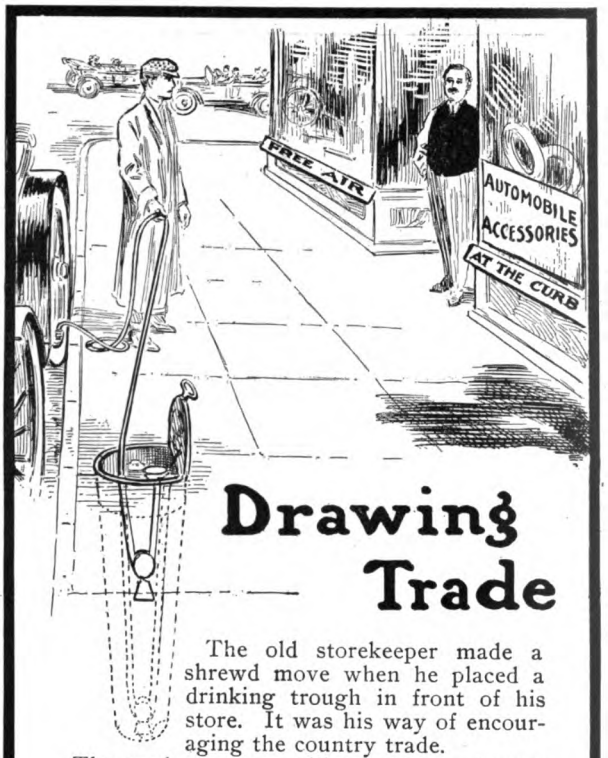
The rubber compound used in Kelly-Springfield Tires couldn't wear so long if the tires weren't hand made. Which means a good deal when you come to think that no other prominent tire manufacturers produce either hand made tires or a rubber composition backed by seventeen years' experience.

Kelly-Springfield Tire Company

Corner Broadway and 57th Street, N. Y.

Branch offices in New York, Chicago, Philadelphia, Boston, St. Louis, Detroit, Cincinnati, San Francisco, Los Angeles, Cleveland, Baltimore, Seattle, Atlanta, Akron, O., Buffalo.

The Hearn Tire & Rubber Co., Columbus, O.
Bering Tire & Rubber Co., Houston, Texas.
Boss Rubber Co., Denver, Colo.
Todd Rubber Co., New Haven, Conn.
H. R. Olmstead & Son, Syracuse, N. Y.
Southern Hdwe. & Woodstock Co., Ltd., New Orleans, La.
Atkinson Tire & Supply Co., Jacksonville, Fla.
Central Rubber & Supply Co., Indianapolis, Ind.
C. D. Franke & Co., Charleston, S. C.
K & S Auto Tire Company, Limited, Toronto.



Drawing Trade

The old storekeeper made a shrewd move when he placed a drinking trough in front of his store. It was his way of encouraging the country trade.

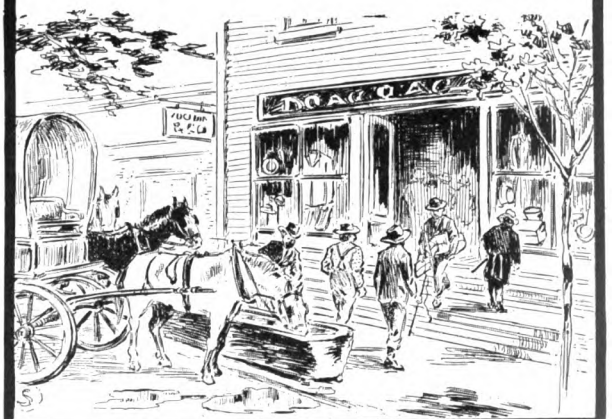
The modern automobilist is just as human as the farmer. He dislikes to pump up tires. He will go out of his way to find compressed air. It is the little courtesies which you extend to him that make him your friend and customer.

Progressive dealers readily appreciate the silent sales-making qualities of the Hale Curb Box and hundreds are installing complete outfits, not only for curb use, but for inside service as well. The box may be installed in the sidewalk, near the curb, or in the garage flush with the floor. It makes opportunities for the sale of accessories and fuel, for it puts the obligation on the motorist to reciprocate the courtesy you extend through your Hale Curb Box.

Get the details at once. Send for bulletin 12-W.

The Hale-Christy Company

Cleveland Ohio



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Dealers and Accessory Manufacturers Will Profit Greatly

by keeping abreast of the rapid development of the "two-wheeler."

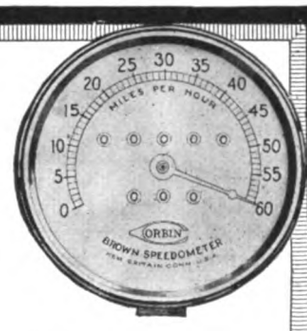
The Bicycling World FOUNDED 1877
and
Motorcycle Review

Published Every Tuesday—$2.00 a Year

This publication records weekly all that is of interest to the trade and to the rider. If you aren't fully acquainted with the paper and the possibilities offered by the field it covers send for free sample copy.

BICYCLING WORLD AND MOTORCYCLE REVIEW, 1600 Broadway, New York

Up in the Sixties





or Down in the Teens

the ground you cover is recorded perfectly if your machine is equipped with the

CORBIN-BROWN SPEEDOMETER

"The Speedometer of Absolute Accuracy"

Write for Catalog

The American Hardware Corporation
The Corbin-Screw Division
213 HIGH STREET NEW BRITAIN, CONN.

Branches: New York, Chicago, Philadelphia



For Your Differentials and Transmissions

You want a lubricant that gives adequate service without being so heavy as to "drag."

Dixon's Graphite Grease
No. 677

Is a grease of just the right body, with the right proportion of Dixon's Ticonderoga Flake Graphite added to give the **permanent** lubricating quality so necessary. It quickly gives the gears a glossy, frictionless surface that minimizes wear and noise, saves power and adds to the life of the car. Write for "Lubricating the Motor," No. 23, the guide to long car life.

JOSEPH DIXON CRUCIBLE CO.
Jersey City Established 1827 New Jersey

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MONDEX

Auto Devices

LEAD the World for Efficiency and Economy

At Dealers Everywhere

Mondex-Helix Gas Mixer

Reduces Your Gasoline Bills 25 to 40 Per Cent.

Price, All Sizes, $5.

Mondex Polish for auto bodies and all varnished surfaces. Dries instantly, leaving a brilliant lustre. Send for **free** sample.

Mondex Shock Preventer

Reduces Your Repair Bills 100 Per Cent.

Saves Wear and Tear of Tires and Eliminates All Vibration.

Motor Car Racing says: "Mondex Shock Preventers proved they are right in the highest court of mechanical test known."



Write for Booklet "W."

Agents Wanted Everywhere

Reliance Automobile Co., Agents for Pacific Coast, San Francisco, Cal.

THE ARISTOS CO.
250 W. 54th St., N. Y.

Bosch Plugs



THE use of Bosch Plugs among all classes of motorists is rapidly extending. Their consistent reliability, the result of years of investigation and experience, makes Bosch Plugs unequalled in efficiency and length of service.

70% of the winners in the 500 mile race, the test of tests, used Bosch Plugs.

$1.00 Each from your dealer. If he has not stocked order direct.

Write for "Locating the Spark Plug." It's free to you.

BOSCH MAGNETO COMPANY
224 West 46th Street New York

Let STEAM Do Mending In 20 Minutes!



At last! A handy vulcanizer that DOES vulcanize—that does NOT burn the tire! Shrinks tire up-keep cost to almost nothing!

There, crammed into a few words, are the astonishing advantages offered to motorists by the Positive Steam Tire Vulcanizer. A vastly improved money-saving device that utilizes steam—the only scientific vulcanizing agent, and at instant notice gives you factory service at home.

Positive Steam Tire Vulcanizer

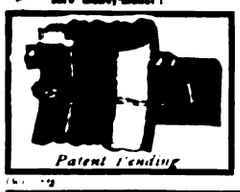
In Single Season Saves Owner Ten Times Cost

All you do is to apply raw gum rubber, clap on the steam vulcanizer, put water in one section, gasoline in the other, and touch a match. In 20 minutes time the job is done. Done so well, mind you, that the union of raw rubber and casing is as solid as the casing itself. Done without risk of ruining your tire by burning it (one of the dangers of the common fire-heated vulcanizers)—AND—done at a SAVING that in one season pays ten times over for the Steam Vulcanizer.

Get More Mileage Out of Junked Tires

That's what you can do. You can mend holes either in tube or casing up to 2½ inches in diameter with one setting. Reset for larger holes. Tires scrapped, can thus be brought to life for hundreds of miles of added service. Price complete $5.00.

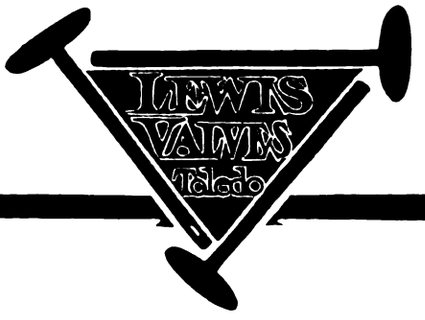
DEALERS! Here's a live proposition! Get in touch with us at once if you want to handle a sure money-maker!



Drop a Card Today

You can't afford to pay big prices for those inevitable tire repairs. Here's ready relief! Utilize it. Send card today for complete information.

THE POSITIVE TIRE VULCANIZER CO.
418 Rock Island St. Davenport, Iowa



Conserve Power

There are certain heat treatments valves must go through to keep them from warping.

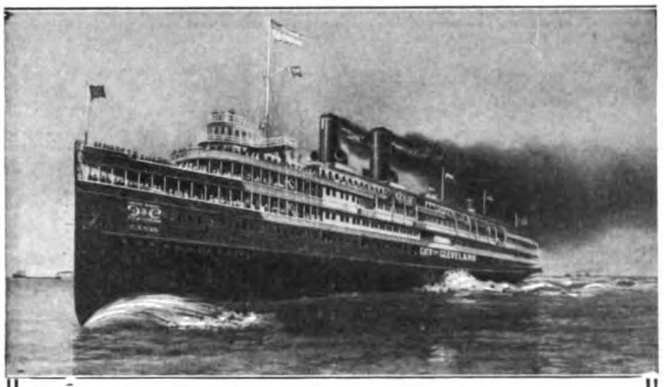
All Lewis Valves are heat treated so that metal strains are taken out—making Lewis Valves last longer and give better service.

Don't overlook the valve question. It's a big factor in gas engine building—doubly important with the present heavy grades of gasolene.

Ask Lewis about Valves—we specialize on valves exclusively.

Lewis Electric Welding & Mfg. Co.
TOLEDO, OHIO

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Should break their journey and avail themselves of the excellent facilities offered by the D. & C. Lake Lines, operating daily service between Detroit and Buffalo and Detroit and Cleveland.

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On your trip this summer, bear in mind "The Water Way is the Comfortable Way."

Send two-cent stamp for illustrated pamphlet and Great Lakes map. Address L. G. Lewis, Gen'l Pass. Agent, Detroit, Mich.

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General Offices, Detroit.

Philip H. McMillan, President.
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YOU can take a *thousand miles of service* out of a set of tires by driving them insufficiently inflated over *ten miles of road.*

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Insures you against premature wearing out of tires.

It is TIRE INSURANCE FOR ONE DOLLAR



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THERE is no method yet discovered of ascertaining the pressure in the inside of a tire, except by the use of a pressure gauge. A casing containing 40 pounds of air looks and feels exactly like a casing containing 80 pounds. If your tires require 80 pounds and you only give them 40, they're on the quick road to the scrap-heap.

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Universal Tire Pressure Gauge

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ABSOLUTE SECURITY ON THE ROAD IN THE GARAGE

Works on an entirely new principle---one push of the thumb breaks the ignition and locks the steering gear at an angle to the curb. The car then cannot be driven, pushed or towed away. The

NoRisko STEERING GEAR & IGNITION LOCK

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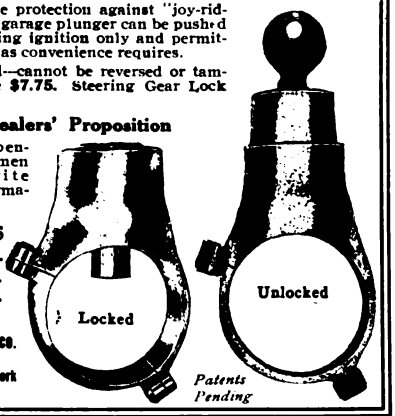
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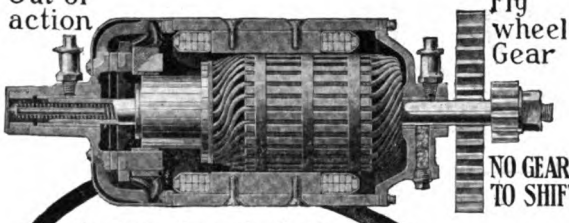
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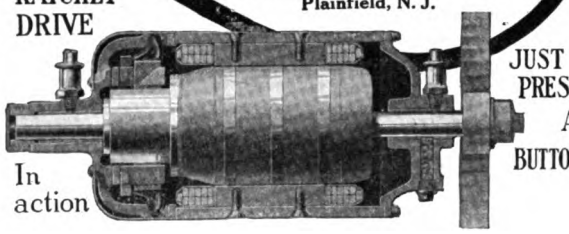
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Two sizes—"A," for the largest engines; "B," for medium sized engines. The Rushmore Dynamo is as automatic, free from mechanism, and reliable as the starter.

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One that does not chafe the tires.

What is the cause of chafing?
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No—leather, and even fabric, is bound to stretch.

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Yes—by pulling the protectors tight by means of stiff springs which take up the stretch automatically.

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Yes—the spring attachment is a patented feature of the oldest and most successful make of protectors—

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Yours very truly,

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ARE superior because they are made right—because they are built by the best workmen and of the best materials obtainable in the world—because they are made and sold by a Reliable Company, and because reliable service is afforded each Purchaser. One, two, three and five ton sizes. Bodies built at our factory to meet the demands of every line of trade. Fifty page Catalogue sent free on request. Some territory still open for reliable dealers only.

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Express Prepaid

These prices apply to the stock on hand only and will be withdrawn when present supply is exhausted.

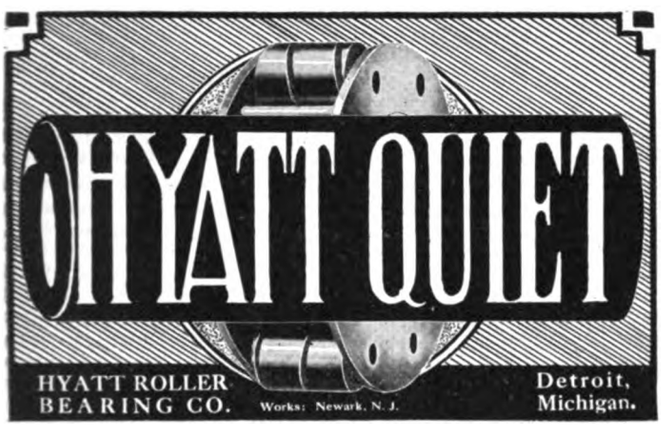
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1600 Broadway New York

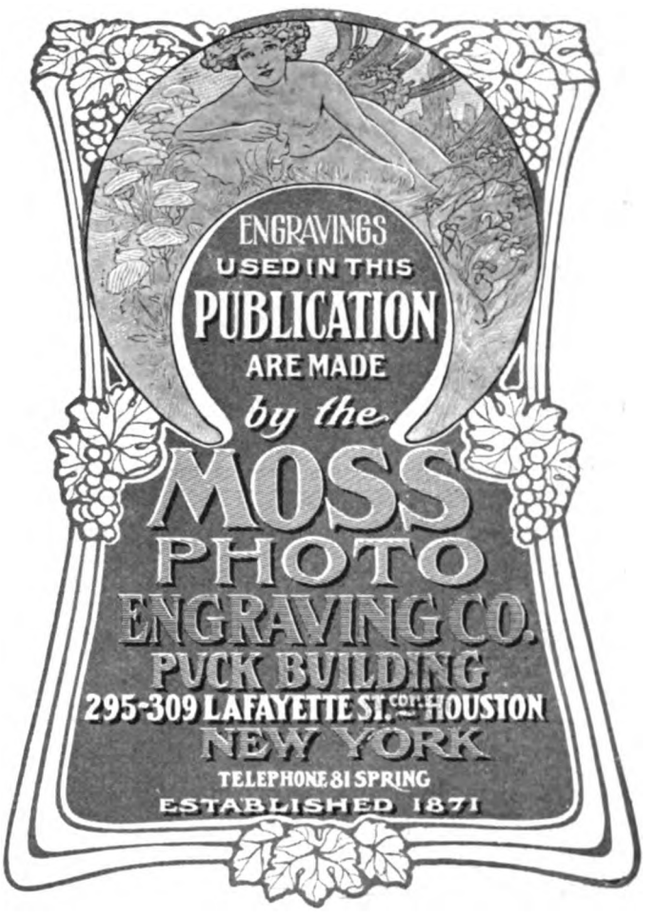
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STARTS—LIGHTS—IGNITES
SILENT—SIMPLIFIED—STURDY

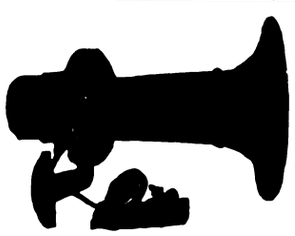
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All Models F. O. B. Detroit. Fully Equipped.

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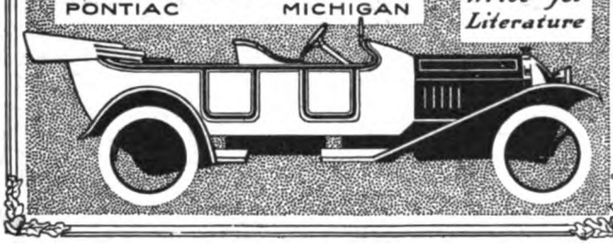
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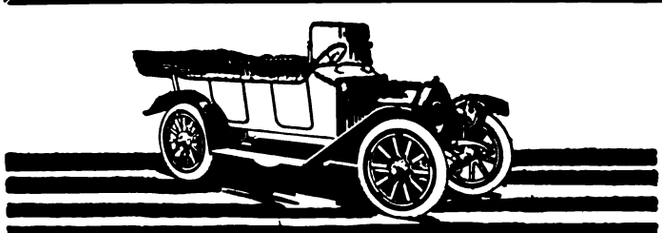
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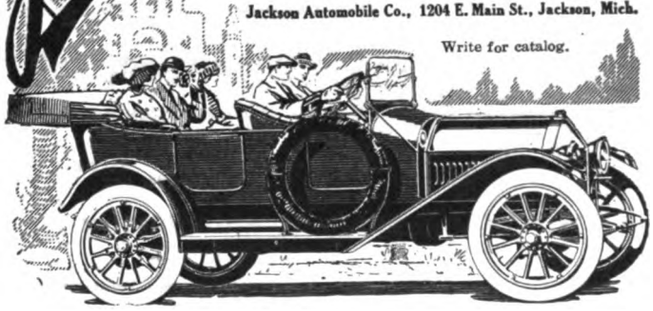
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The Kentucky Thoroughbred

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With Electric Self-Starter. An Electric Starter of proved efficiency is one of the features of the Ames "45"—a car with every essential refinement contributing to comfort, yet priced at $1,785. Without Starter, electric lighted, $1,635. Made with well-known "Amesbilt" body. 5-passenger, motor-driven electric lights. Perfect cooling system. Force-feed pump. Schebler Carburetor, new Remy dual system high tension magneto, oil-driven pumps. Sight-feed. Warner multiple disc, Raybestos-lined clutch. Selective transmission, 3 speeds forward and reverse. Stewart speedometer. Best mohair top, side curtains, boot. 36x4-inch Tires. Powerful, speedy—comfortable—unequalled at price. Write for catalog.



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Detachable Wire Wheels
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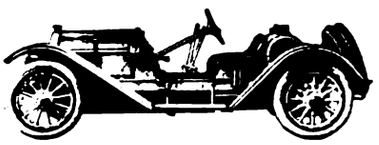
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Our agency will be a big money maker for 1914

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Any Kind Every Kind Stock, or to Blue Print **Rims** Clincher Q. D. Demountable Channels

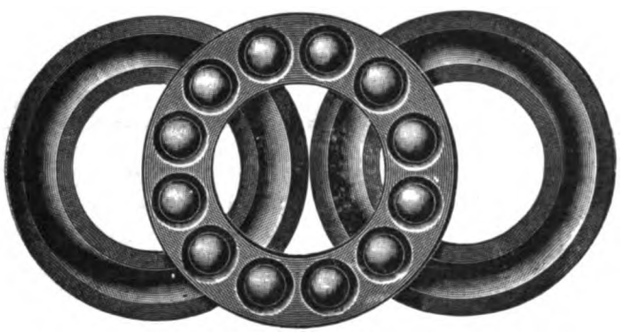
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WE MAKE THE BEST



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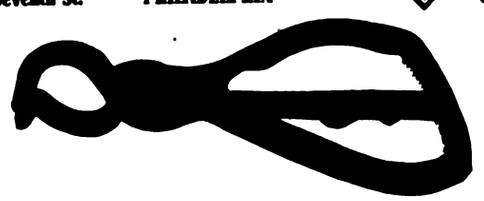
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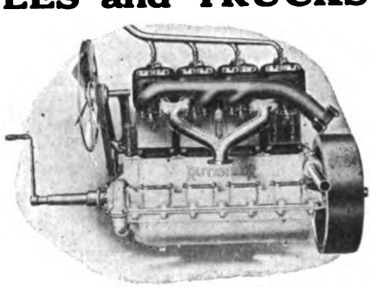
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Interlocks are complete inner tires—not inner shoes—placed between the outer casing and inner tube to strengthen the casing and protect the tube from punctures. They insure safety—make new tires give twice the usual mileage, and add 1000 to 5000 miles to old ones. Don't affect resiliency. Make your tires blow-out proof.

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The One Mechanical, Never Failing Warning Device

Costs Little to Buy—Costs Nothing to Operate

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NEW SOSS CONCEALED DOOR HINGE NO. 121

This new hinge requires a pillar only ⅝ inches wide. It is detached by removing two screws as indicated in illustration. The trouble avoided and time gained in hanging doors when using Soss Hinges are important factors.

Soss Concealed Hinges can be installed flush with the outside of the pillar, allowing the steel or aluminum panel to be turned over flush on to the face of the hinge, and fastened down securely in the rabbet provided on the edge of the face to receive it, thus allowing more than ordinary clearance.

The non-corrosive case attached to the pillar section of the hinge, prevents water from reaching the wood of the pillar through the hinge.

Description:

Face of hinge on pillar, ⅜ in. x 3⅛ in.
Face of hinge on door, ⅜ in. x 2½ in.
Water-proof case mortises into pillar, ⅜ in. x 1⅝ in. x 1¼ in. deep.
Clearance in opening, 11-16 inches.



No 121

Further particulars on application

Soss Manufacturing Co.

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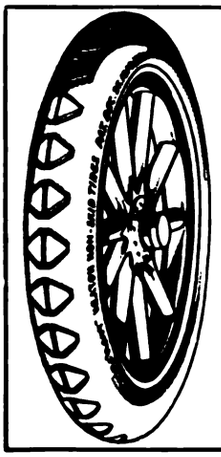
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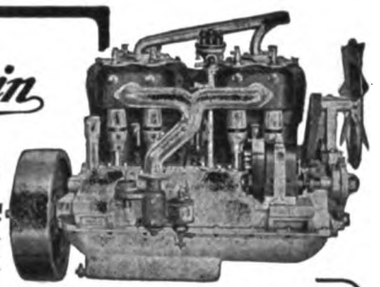
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BRETZ COMPANY
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ALL 4 CYCLE - IN 5 TYPES — 3 3-4 in. bore, 5 in. stroke, 4 cyl. 4 1-4 in. bore, 5 in. stroke, 4 cyl. 4 1-4 in. bore, 5 in. stroke, 6 cyl. 4 3-4 in. bore, 5 1-2 in. stroke, 4 cyl. 5 1-4 in. bore, 7 in. stroke, 4 cyl.

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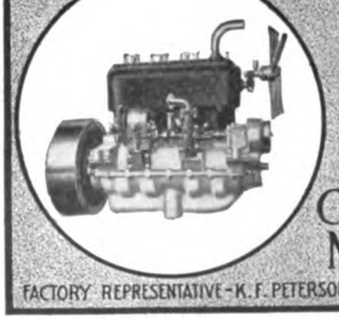
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The only way to make **durable** blow-out repairs **economically** is to reinforce the tire with fabric applied to the inside, fill the hole through the tire with Para gum, then apply heat **both** to the inside and outside. This method avoids cutting away and wasting a lot of expensive tread stock, requires a minimum of fabric and makes a repair that is stronger than the tire. Anyone can use it because the work is all straightforward, requiring no special experience. One set of forms fits all sizes of tires. No extra moulds required.

SHALER Steam Vulcanizer

The Shaler is the only steam vulcanizer that permits using the approved wrapped tread method as it is the only one that applies heat to the inside and outside of a tire simultaneously. It makes perfect blow-out repairs.

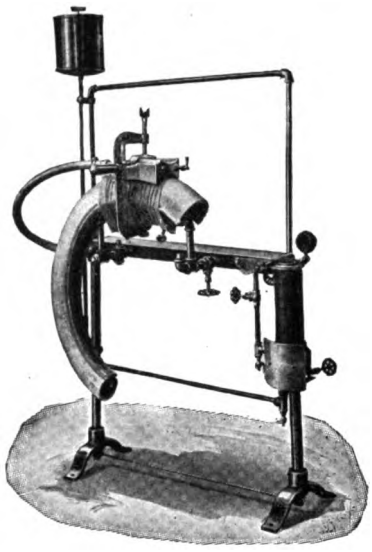
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The boiler, a conical copper coil, heated by a powerful gas or gasoline burner, raises steam so quickly that you can profitably heat the Shaler even if you only have a tube puncture to mend.

The essential Shaler feature of a thermostat to hold the temperature at the vulcanizing degree automatically makes it impossible to overheat a tire. Simply light the burner, and steam is raised to the correct pressure and held there indefinitely.

Price of the complete outfit, including all attachments for tube and casing work, $45.

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Free—a tire handbook for repairmen

Write today on your letterhead for a copy of "Common Sense About Tire Repairs." It contains a lot of money-making ideas about the most profitable part of the repair business.

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Motor Cars or Motor Trucks

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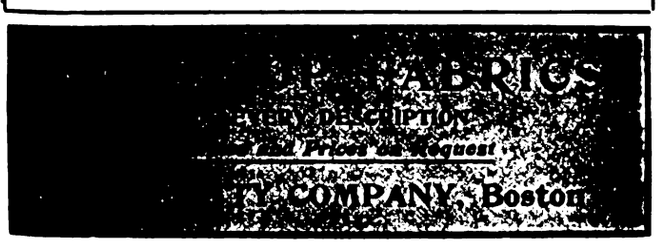
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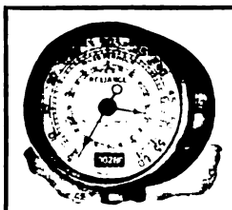
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A tire filler 10 to 20 per cent. lighter than any other tire filler. A big proposition for dealers who are on the alert for more and better business. Write for details.

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Our chemists have discovered a scientific process of toughening pure rubber.

All types of Diamond Tires are now made of Vitalized Rubber—a flint-like, road-resisting rubber that retains all the young, lusty vigor of the pure gum with no loss of elasticity.

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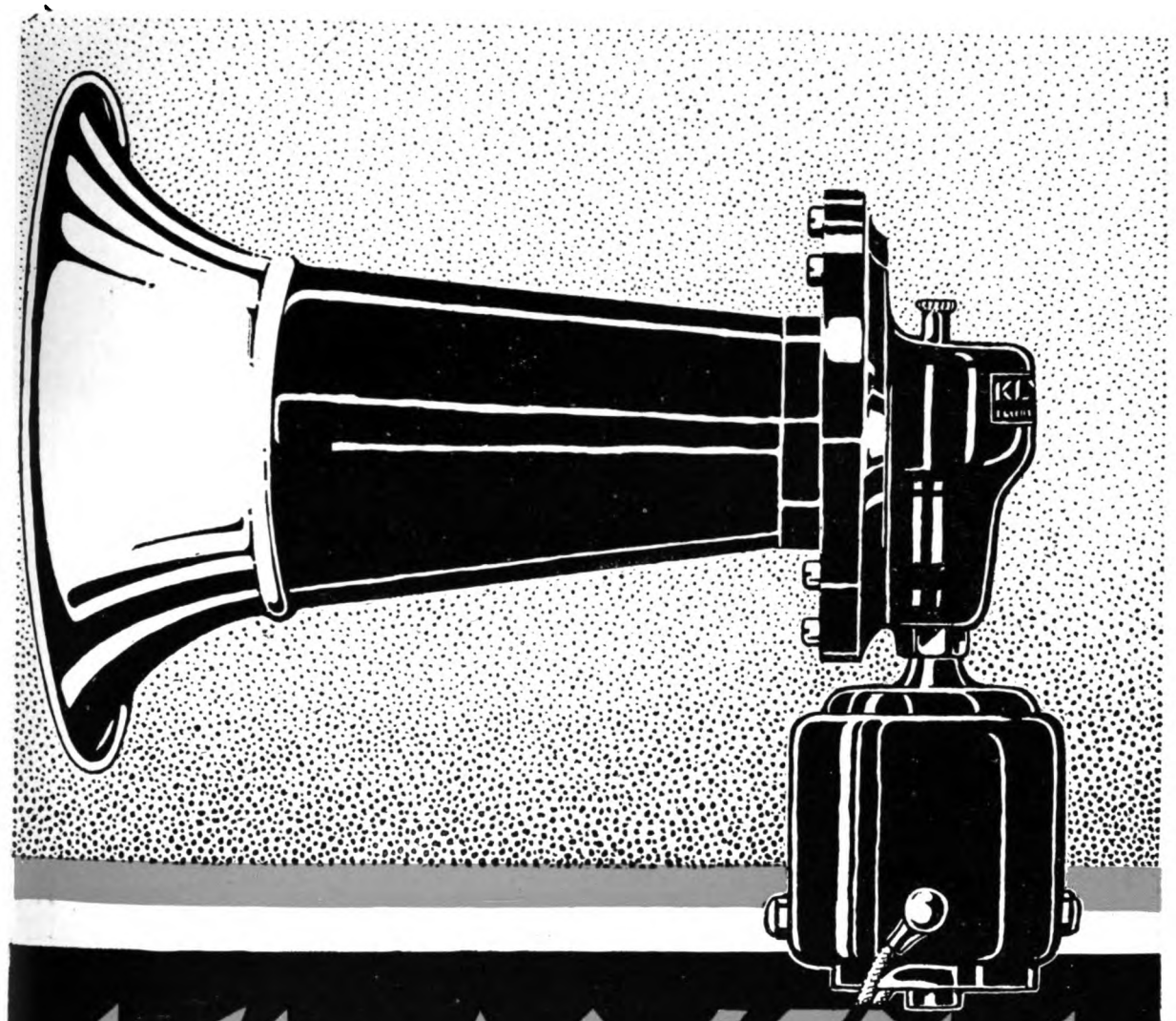
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If you are not a Diamond Dealer—now is the time to get in line. There is a Diamond Branch near you—get in touch today.

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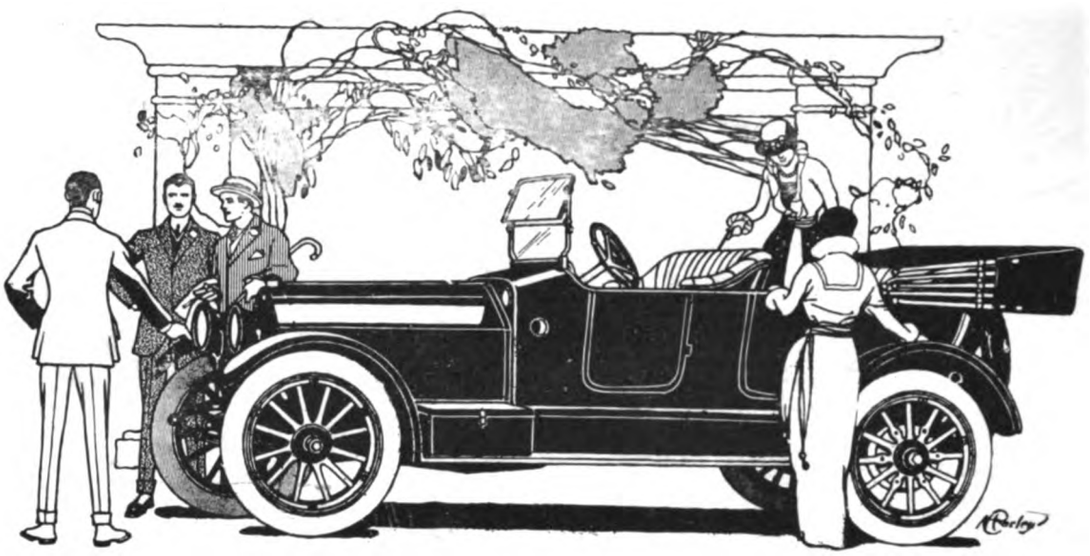
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Six-Cylinder, 50 h. p. Motor
Full Floating Rear Axle
Four Double-Acting Brakes
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35 x 4 1-2-Inch Tires
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Sheffield (English) Steel Springs
Pressure Gasoline System

A 1914 "Six" For the Family

IF you could gather together a representative crowd of Marion owners from city and country you would find them ***solid, level-headed business and family men who invest without making mistakes.***

Their car must be a car of stamina, well-balanced power, convenience, comfort and the kind of good looks that will not suffer by comparison with models of future years.

All this they looked for and found in the Marion.

It is for these reasons that the Marion is often called "the substantial American Family Car."

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Marion Fours---37-A Touring Car; 38-A Roadster---$1475

The Marion Motor Car Company

918 Oliver Avenue, Indianapolis, Indiana

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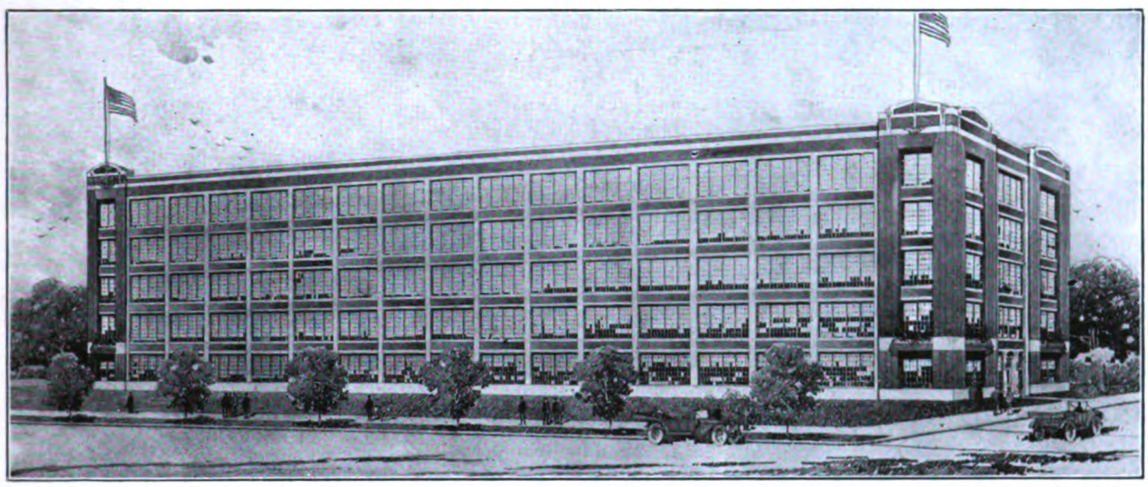
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A Trade Paper Giving the World's Motor News

Vol. XXXVI
No. 7

New York, August 7, 1913

Ten cents a copy
Two dollars a year



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Our New Plant and Its Meaning to You

A Natural Outcome Seventeen years ago when Gray & Davis began building lamps for automobiles, we little anticipated our present huge volume of business.

But just as oil lighting gave way to gas, gas to the Gray & Davis Dynamo, and the starting crank was edged aside by the powerful 6-volt Gray & Davis Starter, we have been "put to it" to keep pace in furnishing facilities to thoroughly care for our rapidly growing business.

Our need for the finest starting system plant was the natural outcome. And now we have it.

Efficient Manufacture Here, by the most approved methods, we will continue the production of the Gray & Davis Starter and Dynamo. Every device that can increase efficiency, cut time and maintain quality, has been incorporated into our new quarters.

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Prompt Deliveries The car manufacturer who builds ten, fifteen or fifty thousand cars and has shipments held up because his Starters are not delivered on time, is losing sales, friends, prestige, reputation.

Buy your Starting-Lighting Systems from the manufacturer having the reputation for delivering in exact accordance with contract specifications, and having the facilities for backing up that reputation. That is the only way to ensure prompt shipment of your automobiles.

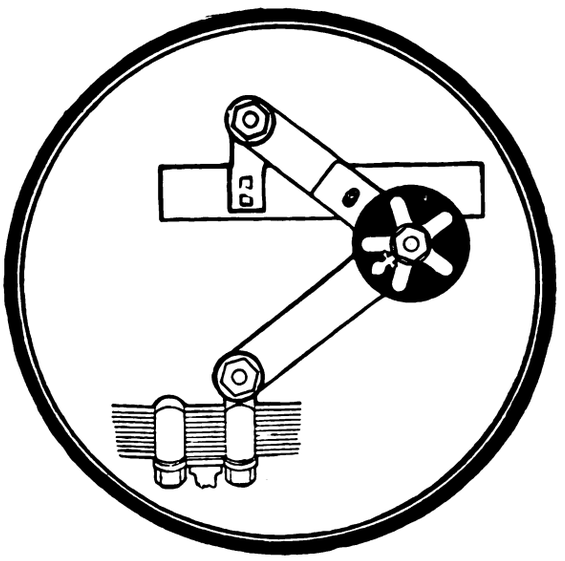
GRAY & DAVIS, Inc.
Boston, Mass.

GRAY & DAVIS

Starting-Lighting System

Published Weekly by the Motor World Publishing Company, 1600 Broadway, New York

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Firestone

"Regulars" Win

IN all the recent Firestone victories, American and International, on speedway or over the mountains, and across the desert—still the winning was achieved by tires from the regular Firestone stock.

All the motoring world is now familiar with the astounding events which in quick succession further sealed the Firestone claim to supremacy on two continents.

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1st in the three big races at Tacoma—100 mile, 200 and 250 miles with Firestone regular tires again victor.

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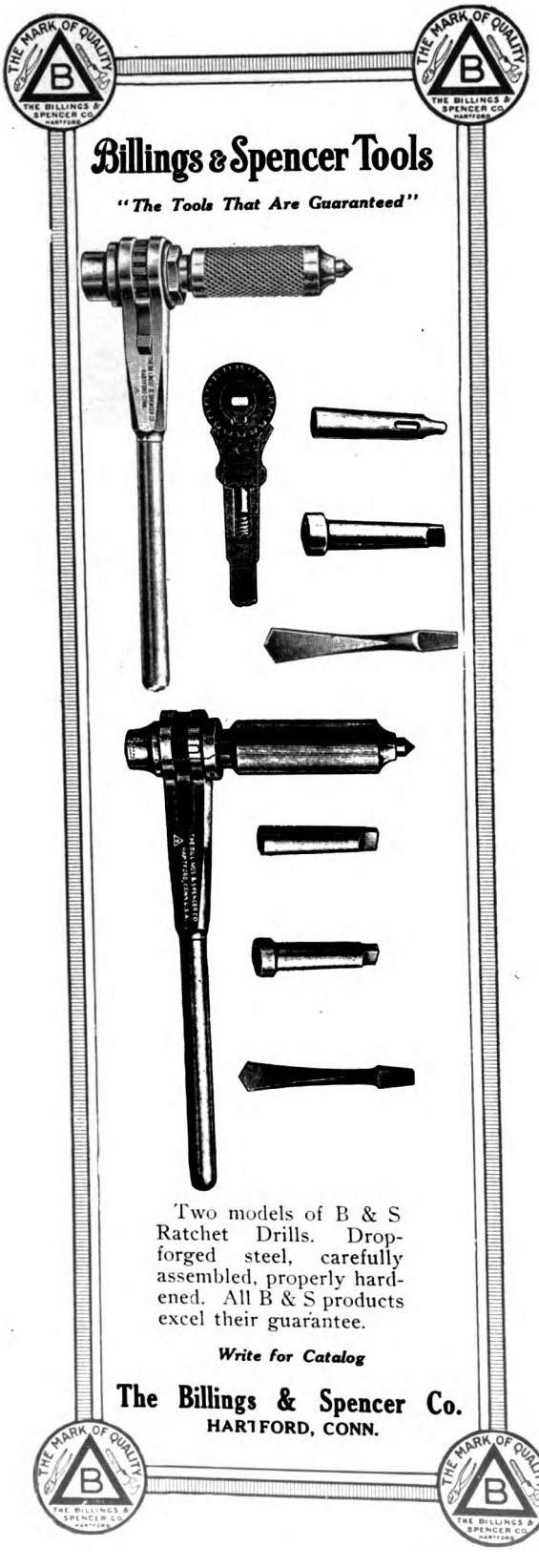
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Toledo, Ohio

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MOTOR WORLD

Vol. XXXVI New York, U. S. A., Thursday, August 7, 1913 No. 7

NATIONAL ASSOCIATION OF SUPPLYMEN MAY BE FORMED

First Step Taken Toward Meeting During Next New York Automobile Show to Consider Project —Weinstock to Issue Call.

In all human probability, the Automobile Supply Dealers' Association will be the name of the next national organization to become attached to the motor vehicle industry. The first step in that direction was taken yesterday (Wednesday) at Atlantic City, where the Cycle Jobbers' Association of America held their annual session in connection with the convention of the bicycle, motorcycle and accessory trades.

The suggestion of an automobile supply dealers' association was let fall during the Cycle Jobbers' meeting by H. Weinstock, of the Weinstock-Nichols Co., of Los Angeles and San Francisco, who, like many of the other jobbers present, handles both cycle and automobile goods.

The suggestion was well received, and led to the designation of Weinstock as a committee of one to invite all of the legitimate automobile supply jobbers to convene during the next New York show for the purpose of effecting an organization of this kind.

Realizing the elasticity of the term "jobber," strong emphasis was and will be placed on the word "legitimate" in shaping the plans for the proposed association. Its purpose will be not so much to deal with business affairs as to promote acquaintanceship and social intercourse and otherwise to convince each jobber that his competitor is not possessed of horns.

It is believed that the happy results which have followed the convention of the cycle trades in Atlantic City each year can be shared by those identified with the automobile industry. While styled conventions, and marked by at least more or less formal business meetings, the Atlantic City affairs are really trade holidays during which there is a maximum of good-fellowship and good times and a minimum of business.

Receivership for the "Mighty Michigan."

Upon the application of Salsberger & Sons Co., of Chicago, and the First National Bank of Cleveland, a receiver was appointed Wednesday last, 6th inst., for the Michigan Buggy Co., of Kalamazoo, which, it is stated, has been hampered for funds since it branched out from the manufacture of carriages and added automobiles to its business; it made the "Mighty Michigan 40." The Detroit Trust Co., of Detroit, was named receiver, the proceedings being held in the United States District Court in Grand Rapids.

The application for a receiver alleged that the liabilities of the company will total $1,600,000. The company manufactured buggies for thirty years.

Briscoe Returns to European Plant.

Benjamin Briscoe, who, with his brother, Frank, some time ago formed the Briscoe Bros. Co., in Billancourt, France, to produce a light car, returned to France Tuesday last, 5th inst., on the Kronprinzessin Cecile, after a visit to America. While it is stated that he is likely to entrust any manufacture of his car in America to others rather than establish a plant here himself, this trip was devoted largely to other matters, most of them of a personal nature. He will, however, return to this country immediately after the Paris automobile show in the fall. Frank Briscoe remains in Detroit.

Steel Man Promoting a Truck Project.

R. R. Herchelroth, of Johnstown, Pa., who for 12 years was employed by the Carnegie Steel Co. and who is possessed of a number of patents on motor trucks and motor fire apparatus, is organizing a company to manufacture those vehicles. He already has secured an option on a factory site located in the Oakhurst district of Johnstown.

FAILURE OF BANK CAUSE OF RECEIVERSHIP FOR WALPOLE

Chief Source of Funds Fails and Embarrasses Solvent Tire Manufacturer—Petition for Additional Receivers Is Opposed.

In order to relieve a situation brought about by the failure in April last of the Atlantic National Bank, of Providence, which was the chief source of accommodations for the Walpole Tire & Rubber Co., of Walpole, Mass., the latter was placed in the hands of a receiver, Robert C. Fischer, on Saturday last, 2nd inst.

The petition for a receiver was filed by Rensselaer Curtis, according to whom the Walpole assets have a nominal value of $4,126,635 and an actual cash value of $2,500,000, there being no mortgage encumbrance or liens of any kind on the assets. The liabilities amount to $1,355,359, as of June 30th last.

The company is, therefore, perfectly solvent, but the conditions created by the failure of the Atlantic bank could not be overcome save through a receivership. In fact, the receiver was appointed at the request of the receiver of the bank, who claims that upwards of $132,000 is due the Providence institution and that only through the courts can the amount be collected.

Fischer, the Walpole receiver, is treasurer of the company, having been elected in July at the instance of the United States Treasury Department to protect the Atlantic bank's claim, but certain of the creditors have nevertheless asked the court to appoint additional receivers. Their petition will be heard on Saturday next and will be vigorously opposed.

Originally the Walpole business was established in 1892 in Boston, under the name Massachusetts Chemical Co., which later was changed to Walpole Rubber Co. and the business removed to Walpole. In

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October last, the present corporation, capitalized at $4,500,000, succeeded the Walpole Rubber Co. It also owns the Walpole Shoe Supply Co., of Walpole, and the Consumers Rubber Co., of Bristol, R. I., the latter of which likewise has been petitioned into the hands of a receiver, one of the three receivers being R. L. Curtis, receiver for the Atlantic National Bank, who holds the largest claim, $42,685, for loans and promissory notes.

Several years ago the Walpole Tire & Rubber interests added automobile tires to their production and less than a year ago erected a large factory solely for their manufacture. At the present time, the plant is being operated "full time" and will be continued without interruption by the receiver.

Large orders are in hand, and during the six months ending July 1st last the gross volume of business done amounted to $1,197,194, at which rate it is estimated that the full year will show a net profit of $200,000.

In June last, the Walpole company offered at public sale $350,000 of an authorized issue of $750,000 three-year six per cent. convertible notes. The notes constitute a first lien on the assets of the company and were exchangeable at any time before maturity for 7 per cent. preferred stock of the company, which latter was offered for public subscription in January.

Fosdick and Wentworth "Double up."

Harry Fosdick, who recently resigned the sales management of the Hupp Motor Car Co., of Detroit, and acquired the Hupmobile agency for all of the New England States except Connecticut, has taken Frank F. Wentworth as a partner and opened up at 926-928 Commonwealth avenue, Boston. Fosdick is one of the real veterans of the trade, which means that he has had ripe experience, while Wentworth is no 'prentice hand, having been identified with the Overland, Marion and several other well-known cars in New England for a number of years.

Ford Purchases Assembling Site in Ohio.

Columbus, Ohio, has been added to the cities in which the Ford Motor Co. will establish and operate an assembling plant. The necessary real estate was purchased last week. It comprises a site, 228 x 666 feet, at Olive avenue and Buckingham street.

General Motors Anticipates a Payment.

The General Motors Co. has anticipated, to the extent of $1,000,000 the $2,000,000 payment on account of its sinking fund which is due October 1st. The amount has been paid in cash to the Central Trust Co., of New York, the trustee.

COURT FINES "LEAGUE" BUT INJUNCTION IS TERMINATED

Disobedience of Restraining Order Brings Penalty, but "League" is Again Free to "Do Things"—Bidwell Back from Canada.

For violating the temporary injunction obtained by the Northland Rubber Co., of Buffalo, restraining the International Automobile League and its officers and employes from selling Northland tires and seeking to acquire capital stock in the Northland Rubber Co., Justice Frank C. Laughlin, in the New York Supreme Court, on Saturday last, August 2nd, imposed a fine of $250 on the League and $50 on James J. O'Shea, its sales manager.

Having meted out this punishment, Judge Laughlin, however, refused the Northland Rubber Co.'s plea for a continuance of the injunction, which leaves the International Automobile League, Alfred C. Bidwell, its president, and everyone else connected with it free to "do things" as they had been doing them before the restraining order was issued.

Judge Laughlin refused to continue the order on the broad general ground that the Northland complaint "did not state a sufficient cause for action," but without prejudice to its renewal on proof of violations of the temporary injunction.

In a memorandum filed with his decision, the court states that the contracts, violations of which by the league and Bidwell were asserted by the Northland Rubber Co., had been terminated and are no longer binding on the defendants.

"It may be argued," says Justice Laughlin, "that it should not be held that it was within the power of Bidwell by resigning to terminate the contracts and deprive the plaintiffs of the fruits thereof, and yet, such is the contract of the parties, if it be literally construed; but, it is necessary to decide whether the continuation of the injunction should be denied on that ground alone, for the plaintiff (Northland Rubber Co.) elected on account of alleged violations of the contract by the league to cancel the selling agency of the league, which was a material provision of the contract, and the parties apparently agreed to terminate their contract relations by a settlement contract, which apparently rested on a good consideration."

This decision has no bearing on the claim for damages made by the Northland Rubber Co. against the League and Bidwell for $26,303.33 and other sums, which claims will be determined by civil suit which is pending, nor does the decision in any way affect the Northland $100,000 libel suit against Bidwell, who, incidentally, surrendered himself to the sheriff Tuesday afternoon. He stated that he had just returned from Toronto and claimed that he did not hear of any proceedings against him until he reached Buffalo. He was taken to court and released on $2,500 bail.

Rands Pays More for Warren Plant.

Although the court refused to confirm his purchase of the assets of the bankrupt Warren Motor Car Co., of Detroit, when they were offered for sale by the receiver on June 26th last, W. C. Rands, of the Rands Mfg. Co., again proved the successful bidder when, for the second time, the property was put on the block on Monday last, 4th inst. Rands paid $120,000 for the assets, which include two large buildings and their equipment and the material on hand. On the previous occasion, his bid amounted to $104,000.

The only other bidder of consequence was the Peter Smith Heater Co., which after the first sale interposed the objections which caused the court to set it aside. The Warren accounts and bills receivable were not sold and will be collected by the receiver, the Detroit Trust Co. It is Rands's intention to take immediate possession of his acquirement and immensely enlarge his production of windshields and tops.

Owosso Demands Return of Reliance Bonus

Despite the fact that when the General Motors Co. recently discontinued the Reliance truck factory in Owosso, Mich., it gave assurances that the plant would be used for other purposes, not all of the residents of the little city have taken full stock in the statement. In order to bring the matter to a head, and to secure something in writing, the mayor of the city has, therefore, addressed the General Motors officials demanding the return of the bonus given when the Reliance business was established in Owosso. At that time, it is stated, the Reliance company, which later became a part of the General Motors organization, signed a 15-year contract which has not yet been fulfilled. It is said that the factory furnished by Owosso cost the city about $30,000.

Chevrolet Leaving Detroit for Flint.

The Chevrolet Motor Co. is finally preparing to leave Detroit and take up its abode in Flint, Mich. A portion of its effects already has been removed and it is expected that the company will be in Flint about September 1st. It will occupy buildings vacated by the Imperial Wheel Co., which has transferred its equipment to what is known as the Webster plant on Ridgefield road.

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CAR EXPORTS FOR FISCAL YEAR OF 1913 GAIN 27%

Automobiles and Allied Products Total $36,925,349 — Average Value of Cars Advances by $39—Imports Continue to Lose.

During the fiscal year which ended June 31st last the exports of automobiles and kindred products from the United States gained 27 per cent., or $7,832,148, over the corresponding twelve-month, according to a preliminary report of the Federal statisticians; the value of cars, parts, engines and tires shipped abroad during the 1913 fiscal year totaled $36,925,349 as compared with $29,093,201, which was the figure for the 1912 year.

Cars themselves totaled $26,012,934 in 1913 and $21,550,139 in 1912, an increase ot $4,462,795 in value; the number exported in the twelve-month just closed was 25,286 and in the preceding fiscal year 21,757, an advance of 3,529. The average value per car gained by $39, it being $990 in 1912 and $1,029 in 1913. Parts added $5,240,599 to the figures in 1913 and $4,107,155 in 1912, a gain of $1,133,444.

Engines recorded a marked increase in value, more than doubling; in 1913 the value was $778,098, and in 1912 $1,728,596, an increase of $950,498. The number record is 6,891 for 1912 and 11,402 for 1913, advancing by 4,511. Tires advanced $1.285,411, being $2,657,809 in 1912 and $3,943,220 in 1913.

Car imports declined $374,801, or 21 per cent. In 1913 the value of cars imported was $1,759,380 and in 1912 $2,134,181. The record for number was: 1912, 963; 1913, 748; a loss of 215. Parts fell from $304,144 to $263,827, a drop of $40,317. The figures for car and parts imports were: 1912, $2,438,325; 1913, $2,023,207, a loss of $415,118 The average value of cars imported in 1912 was $2,216 and for 1913 $2,352, a gain of $136.

For the month of June alone, as compared with the preceding June, the total value of the products exported gained $329,280; in June, 1912, the value was $2,851,716 and in June, 1913, $3,180,996. Imports of cars and parts for these same comparative months fell from $121,335 to $117,512, a loss of $3,823.

The figures for the separate products exported in the two Junes, with the gains or losses, are: Cars, 1912, 1,941; 1913, 2,154; gain, 213; value, 1912, $2,116,174; 1913, $2,191,152; gain, $74,978. Parts, 1912, $361,835; 1913, $549,616; gain, $187,781. Engines, 1912, 547; 1913, 53; loss, 494; value, 1912, $51,818; 1913, $9,103; loss, $42,715. Tires, 1912, $321,889; 1913, $431,125; gain, $109,236.

Truck Salesman Sues for Defamation.

Despite the fact that George W. Kayton, a salesman, won his suit for commissions against the Universal Motor Truck Co. in the New York City Court recently, as stated in Motor World, he and the company have not yet retired from the courts, for Kayton this week filed another action in the Supreme Court for New York county for $10,000 damages, alleged to have been sustained through derogatory charges made against him by the Universal company.

Kayton's claim for commissions was based partially upon testimony of Howard M. Walton, then connected with the Universal company in New York, and after he had won his suit the Universal company had him summoned to court on a charge of having entered into a conspiracy with Walton in which false testimony was used. The court, however, dismissed the charge, and Kayton now claims that after he left the Universal he secured a position with the Walpole Rubber Tire Co. at a salary of $35 a week and commissions, but that because of the charges made against him he lost this position and since has been unable to secure employment. He also alleges that at the time the charges were made he was well and favorably known in the automobile and accessory trade, but that the cause of his complaint has given him a "black mark" which he is having no little difficulty in erasing.

Fire Destroys Indianapolis Body Plant.

Fire which broke out at midnight on Friday last, 30th ult., totally destroyed the plant of the Showalter Mfg. Co., at 314 Hansom street, Indianapolis. Automobile bodies were the chief product of the company and the inflammable material made quick food for the flames. The Showalter loss, however, is comparatively small—$5,000—the heaviest damage falling on two Indianapolis automobile companies, several of whose chassis were in the Showalter establishment waiting to be equipped with bodies.

Grant Repudiates Cyclecar Designation.

Bothered by persistent reference to its attractive little vehicle as a cyclecar, the Grant Motor Co., of Detroit, is very anxious to have it generally known that the Grant is not in the cyclecar class but is an automobile in the full sense of the word. The Grant people say it was designed long before cyclecars were thought of, and point out that, being of standard gauge and having a gear shift and regular seating capacity, there is no justification for terming it a cyclecar.

REDUCED DUTY ON CARS AND PARTS ADOPTED BY SENATE

Fixes Tax on Cars at 15 to 45 per Cent. —Chassis and Parts at 20—Opposition Proves Unavailing — Ford Dividend Cited.

Efforts of Senators Smith and Townsend, of Michigan, and Senator Brandegee, of Connecticut, proving of no avail, the United States Senate on Tuesday last, 5th inst., adopted the reduced duties on automobiles, chassis and parts as proposed by the Senate finance committee and later slightly amended by the Democratic caucus. The rates as adopted are as follows:

Finished automobiles valued at $1,500 or over, 45 per cent.; valued at less than $1,500 and more than $1,000, 30 per cent.; valued at less than $1,000, 15 per cent.; automobile chassis and finished parts of automobiles, not including tires, 30 per cent.

These rates were adopted only after two hours' discussion, which largely was wasted breath, as an earlier vote on an amendment offered by Senator Brandegee distinctly showed the temper of the Senate majority. The Brandegee amendment, which proposed to insert "or chassis" after the word "automobile," was defeated by a vote of 21 to 46, all of the Democrats and seven Republicans voting against it. The seven Republicans are as follows: Bristow, Crawford, Cummins, Gronna, Jones, Sherman and Sterling.

Senator Smith, of Michigan, drew attention to the fact that employes of every automobile factory in Detroit had joined in a protest against the proposed reduction, but during the course of the debate he and his colleague, Senator Townsend, were forced to admit that one Detroit manufacturer had distributed approximately $10,000,000 in dividends this year and that for several months he had been producing one automobile every minute.

Senator Cummins of Iowa, as his vote on the Brandegee amendment indicated, was not in sympathy with the gentlemen from Michigan. He has pending an amendment wiping out all classifications of automobiles and providing a blanket duty of 25 per cent., which amendment will be called up later, but on Tuesday he strenuously opposed the proposal to reduce the rates on the lower priced cars, declaring that Europe could not compete with this country in the manufacture of such automobiles, which assertion served to bring out the Ford Motor Co.'s recent $10,000,000 distribution.

Senator Cummins also pointed out that the Senate amendment which fixes a duty of

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45 per cent. on finished automobiles valued at $1,500 or over but which permits the admission of automobile chassis and finished parts of automobiles, not including tires, at 30 per cent., would permit the owner of an automobile purchased abroad to bring it in at the lower duty simply by taking it apart and importing it in parts instead of as a whole.

The rates adopted by the Senate differ materially from those enacted by the House in May last, when the Underwood tariff was passed by a vote of 281 to 139, taxing finished automobiles 45 per cent., chassis 30 and automobile parts 20. The existing duty is 45 per cent. on cars, chassis and parts without distinction.

Detroit McCord not in Automobiles.

Because of the organization in Chicago of the McCord Automobile Co., the McCord Mfg. Co. of Detroit, which manufactures radiators, lubricators, etc., bearing its name, has found it necessary to issue a denial of their connection with the Chicago enterprise, or any other automobile or motor project. The company states that neither its president, A. C. McCord, of Chicago, nor any of its officers or stockholders, is directly or indirectly interested in such enterprises.

Engine Makers Sue Cutting Bankrupt.

Although a petition in bankruptcy was filed against the Cutting Motor Car Co., of Jackson, Mich., as it has not yet been adjudicated a bankrupt the Wisconsin Motor Mfg. Co., of Milwaukee, has brought suit against it for $25,000, representing the balance due on shipments of motors. The hearing in the case, which is the second of the sort which has been brought by the Wisconsin manufacturers, has been set for August 12th, one week previous to the date set for the sale of the Cutting assets.

Williams May Make Rear-End Signals.

George R. Williams, of Detroit, has organized the Williams Auto Stop Signal Co., Ltd. It is designed to market an automatic signal of which he is the inventor. The device comprises a plate on which is inscribed "Stop" attached to the rear of a car which is automatically displayed whenever the clutch is thrown out. Williams figures that the use of his signal will greatly reduce rear-end collisions.

Plant Leased for Anderson Engines.

The Anderson Automatic Engine Co., of Davenport, Iowa, of which C. C. Anderson is president, has purchased what was formerly the Killing molding machine plant in that city. It will be utilized for the manufacture of gasolene engines and motor driven section cars.

DE VOLL PROMOTES SPRING TIRES AND LANDS IN JAIL

Is Accused of Diverting Funds—His "Factory" a Lathe and Drill, Both Mortgaged—Peoria's Rosehued Dream Rudely Disturbed.

C. H. De Voll is one of the comparatively few men who have made real money out of spring tires. Despite the fact, De Voll is unhappy, for late last week he was arrested on a charge of having obtained the money under false pretenses.

He was president of what was called the American Spring Tire Co., a Delaware corporation, which owned patents on a spring tire which, of course, was designed to "put the pneumatic out of business" and make millions for all who invested in it, but as a preliminary thereto it was necessary to obtain "working capital."

De Voll was possessed of the notion that the best way to secure it was to sell state or county rights and dot the country with spring tire factories. At any rate, he sold the rights for 40 counties in Illinois to four Peoria men who are said to have agreed to pay $3,500 for them and who actually made a deposit of $400 to bind the contract. The purchase price included machinery for making the tires, which was to be removed from a so-called factory in Chicago to Peoria.

When, after several demands, De Voll failed to fulfil his part of the agreement, the Peorians, chief of whom was George W. Haas, a tire dealer, started an investigation and, discovering that funds of the company had been diverted, they swore out a warrant for De Voll's arrest.

Meanwhile, they had leased a building in Peoria in which the spring tire plant was to be set up and, the Peoria papers having carried "scare stories" of the "new industry," the price of building lots in the vicinity of the projected fatcory began to soar. When the bubble burst, it was discovered that De Voll's Chicago "factory" consisted chiefly of a drill press and a lathe on which a mortgage had been foreclosed.

De Voll was not in evidence at the "factory," but detectives located him at his home and in due course he was arrested. It is stated that, in addition to the Peoria people, a number of Chicagoans also had invested in De Voll's company. However, the latter may feel about it, it is added that not all of the Peorians have lost faith in the tire.

Landlord and "Building Company" at Odds.

Claiming that the Automobile Building Co., of 1920-32 Broadway, New York City, has defaulted in its rent and in paying the taxes and water bills on the premises it occupies, Robert Goelet filed suit this week in the Supreme Court for New York county for $18,183.23. The complainant states that he leased the premises February 1, 1909, for 20 years to Frank E. Malone, who subsequently turned the lease over to the Automobile Building Co. It is further alleged that he agreed to pay $57,500 rent, the taxes and water bills. The claim is made up as follows: May and June rent, $9,583.34; taxes, $8,371.25; water bill, $228.64.

Canadian Gramm Gets Gas-Electric Rights.

W. M. Bennett, for the past two years vice-president and general manager of the International Electro-motive Co., has been elected vice-president of the Gramm Motor Truck Co. of Canada, which is located in Walkerville, Ont. Bennett's entry into Gramm affairs, and the interests which he represents, will give to the Gramm company the exclusive right to use the International company's "Gas-Electric" transmission system in motor trucks in the Dominion. H. W. Acason will remain president of the Gramm Canadian company and F. H. Galusha will continue as secretary-treasurer.

Push up Price of "Gas" in Texas.

Instead of an expected reduction, the Texas citizens who have to do with gasolene were disagreeably surprised on Friday last, 1st inst., when four oil companies located in that State added two cents a gallon to the price of "gas," bringing it to 18 cents. In Texas there are those who maintain that because two of the companies recently were fined $100,000 by the State they are "taking it out on the public." Needless to add, however, no oil producer would would be guilty of anything of the sort!

Motz Transfers its Philadelphia Interests.

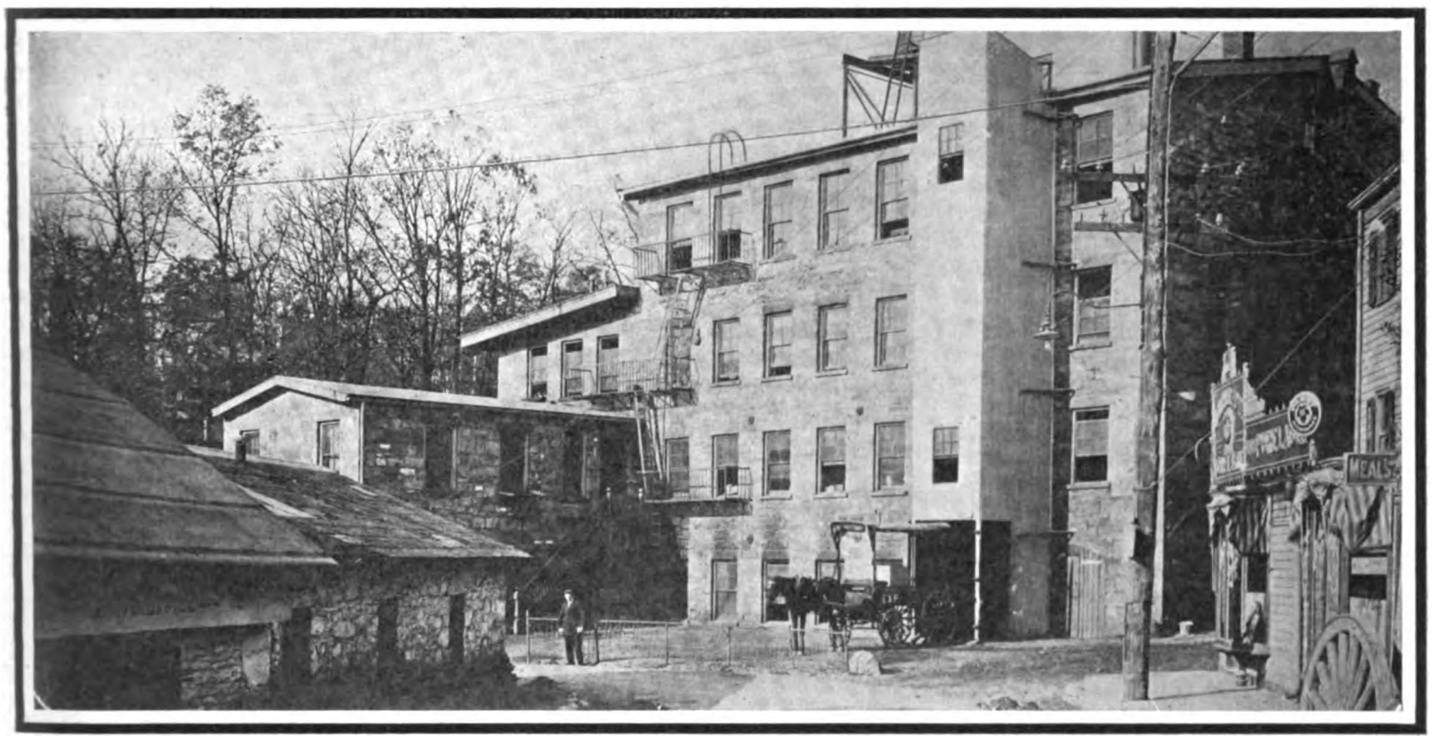
The Motz Tire & Rubber Co., of Akron, Ohio, has discontinued its branch in Philadelphia and turned over the agency for its production to the Hall Rubber Co., 1402 Ridge avenue, in that city. The Hall company will have Eastern Pennsylvania and all of Maryland and Delaware as its territory. W. M. Stubbs, former manager of the Motz branch, has followed the Motz tires into the Hall company.

Firestone Man Swinging Around the Circle.

A. G. Partridge, assistant sales manager of the Firestone Tire & Rubber Co., has departed for a swing around the trade circle which will take him first to Winnipeg and Vancouver and then to all the cities on the Pacific Coast, and in the West generally where a Firestone branch or agency is maintained. He will be absent about six weeks.

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The Week's Incorporations



FACTORY OF THE WARD LEONARD ELECTRIC CO., IN BRONXVILLE, N. Y., IN WHICH IT HAS DEVELOPED AND IS SPECIALIZING IN AN AUTOMATIC ELECTRIC STARTING AND LIGHTING SYSTEM FOR AUTOMOBILES

Plymouth, Mich.—Automatic Muffler Mfg. Co., under Michigan laws; authorized capital, $15,000.

Roanoke, Va.—Citizens' Auto Transportation Co., under Virginia laws; authorized capital, $40,000.

Paris, Tex.—Lamar County Automobile Club, under Texas laws. Corporators—J. E. Varner, S. B. Gilbert, M. A. Walker and others.

St. Louis, Mo.—Sta-Tite Packing Ring Co., under Missouri laws; authorized capital, $3,000; to manufacture packing rings and automobile accessories.

Spokane, Wash.—Spokane Auto Mfg. Co., under Washington laws; authorized capital, $50,000. Corporators—E. A. Torrance, R. L. Dickerson, P. H. Witschge.

El Paso, Tex.—El Paso Vulcanizing & Auto Supply Co., under Texas laws; authorized capital, $100,000. Corporators—C. W. Mace, William Mace, Charles Fowser.

Milwaukee, Wis.—Chase Motor Truck Service Co., under Wisconsin laws; authorized capital, $25,000. Corporators—Louis C. Pauly, Jr., Ella Pauly, Louis Fernhaber.

Cleveland, Ohio—Arter Auto Body Co., under Ohio laws; authorized capital, $20,000. Corporators—Edward Younger, Frederick S. Rice, J. S. Castle, W. E. Freese, W. J. Redmond.

Harrisburg, Ill.—Parish Ferrell Mfg. Co., under Illinois laws; authorized capital, $50,000; to deal in motor cars and trucks. Corporators—Fred C. Ferrell, Cheaney L. Parish, John J. Parish.

Bridgeport, Conn.—Manufacturers' Sales Agency, under Connecticut laws; authorized capital, $25,000; to deal in motor cars. Corporators—Miles V. Doud, Frederick K. Doud, William L. Scott.

Bridgeport, Conn.—Bridgeport Body Co., under Connecticut laws; authorized capital, $50,000; to manufacture automobile bodies. Corporators—A. W. Ferry, A. W. Sherrod, J. W. Horton, J. H. Hinman.

Chicago, Ill.—Chicago Tire Goods Co., under Illinois laws; authorized capital, $10,000; to deal in motor car supplies and accessories. Corporators — Louis Dulsky, Samuel Dulsky, J. E. C. Blake.

Little Rock, Ark.—Kerosene Carburetter Co., under Arkansas laws; authorized capital, $12,000; to manufacture carburetters for motors. Corporators—Walter G. Addison, W. F. Garnett, W. H. Garnett.

Chicago, Ill.—Michigan Motor Car Co. of Chicago, under Illinois laws; authorized capital, $25,000; to buy and sell motor cars and accessories. Corporators—W. J. Pierce, Edward D. Stuntluff, Maurice E. Stuntluff.

Cleveland, Ohio—Modern Garage Co., under Ohio laws; authorized capital, $10,000; to care for and deal in motor cars. Corporators — Elmer E. Terrell, Albert F. Pliske, Max F. W. Pliske., R. M. Ostrander, V. E. Davis.

New York, N. Y.—Motor Owners' Association, under New York laws; authorized capital, $10,000. Corporators — John C. Travis, 350 West 71st street; Charles L. Clune, Peekskill; Marie M. Novey, 2553 Davidson avenue.

Chicago, Ill.—Turbine Muffler Co., under Illinois laws; authorized capital, $2,000; to manufacture and sell turbine mufflers and other automobile accessories. Corpor-

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ators—Joseph Libel, George W. Gardner, John J. Karcheiser.

Chicago, Ill.—Electric Auto Sales & Rental Co., under Illinois laws; authorized capital, $12,000; to deal in electric motor cars, motorcycles, etc. Corporators—Nathaniel Rubinkam, Heymann F. Tucker, Grover C. McLaren.

New York, N. Y.—James J. Fero, Inc., under New York laws; authorized capital, $20,000; to deal in tires. Corporators—James J. Fero, 172 Manhattan street; Geo. D. Brown, 108 West 84th street; William S. Foos, Hudson Heights, N. J.

New York, N. Y.—F. D. Homan, Inc., under New York laws; authorized capital, $2,000; to deal in motors, etc. Corporators—Frank D. Homan, 239 West 56th street; Benjamin Jackson, 68 West 107th street; Alphons E. Kannengeiser, 285a 13th street.

New York, N. Y.—Caledonian Oil Co., under New York laws; authorized capital, $10,000; to purchase and deal in lubricating oils, etc. Corporators—J. E. Hernandez and A. B. Brushaver, both of 135 Front street; Harry Hess, Inquisidor 5, Havana, Cuba.

New York, N. Y.—Knight Tire & Rubber Co. of New York, under New York laws; authorized capital, $5,000. Corporators—James C. Nichols, 67 Franklin avenue, New Rochelle; William B. Highes, 879 West End avenue; David L. Fultz, 2112 Beverly Road, Brooklyn.

Fostoria, Ohio—Allen Motor Co., under Ohio laws; authorized capital, $500,000; to manufacture gasolene engines and motor vehicles. Corporators—E. W. Allen, W. O. Allen, J. E. Wright, O. P. Bernhart, E. A. Thomas, George E. Schroth, Grattan H. Baker, R. J. Christie, H. C. De Ran.

New York, N. Y.—Bobra Spark Plug Co., under New York laws; authorized capital, $12,000; to manufacture spark plugs and other automobile parts. Corporators—William Bohleber, 149 Broadway; Chester H. Braselton, 926 Manhattan avenue, Dayton, Ohio; Cyrus L. Bundy, 322 N. 18th street, East Orange, N. J.

Buffalo, N. Y.—Biggam Engineering Co., under New York laws; authorized capital, $200,000; to manufacture transmissions, clutches and other automobile parts, and to operate a general machine shop. Corporators—Harry F. Biggam, 873 Dewey avenue, Rochester; Nathan D. McDowell, Alexander and East avenues, Rochester; and Carlough E. Buck, 247 Rhode Island street.

Increase of Capitalization.

Akron, Ohio—Akron Gear & Engineering Co., from $20,000 to $50,000.

PROMINENT MEN IN TRADE WHO ASSUME NEW DUTIES

Resignations and Promotions That Serve to Place Many Workers in New Places—Few Leave the Industry.

C. D. Paxton, of Cleveland, well known in the automobile trade, has been appointed sales manager of the Enger Motor Car Co., of Cincinnati. He will, however, maintain an office in Cleveland.

Spencer Murfey, who was formerly with the Republic Rubber Co., has been added to the Grant-Lees Car Co.'s sales staff. He will have charge of Michigan territory, with headquarters in Detroit.

W. B. Jameson, who at one time was prominently identified with the United States Motor Co., has been appointed superintendent of the Maxwell-Newcastle Mfg. Co., in Newcastle, Pa. He succeeds Fred Bajus.

R. F. Judisch, for five years past in charge of the gear department of the American Ball Bearing Co., has joined the Grant-Lees gear organization in that city. Before going to Cleveland, Judisch was for 12 years gear expert of the Brown & Sharpe Co. in Providence, R. I.

G. A. Wells, for 10 years chief engineer of the Adams Express Co., has joined the Autocar Co., of Ardmore, Pa., and will fill a new office, that of instaliation engineer, which has been created for him. Few men, if any, have had more varied or more intimate experience with commercial vehicles of all sorts.

F. W. Heiskell, assistant advertising manager of the International Harvester Co., has been promoted to the management of the advertising department to succeed M. R. D. Owings. The vacancy created by his elevation has been filled by the appointment of A. C. Seyfarth, former head of the I. H. C. production department.

Following the amalgamation of the sales departments of the Marion and American motor companies, and their taking over by the J. I .Handley Co., of Indianapolis, M. D. MacNab, vice-president of the Marion company, has been transferred to Chicago, where he will look after the Handley affairs in the Central States. As MacNab has lived most of his life in Chicago, its surroundings are not strange to him.

Two Tradesmen Meet Tragic Death.

E. Roger Stearns, president of the Los Angeles Automobile Dealers' Association and agent for Kissel cars, and R. D. Barr, manager of the Firestone Tire branch in that city, are dead as the result of an automobile acicdent which occurred on the 29th ult. They occupied a stripped car driven by Stearns and while going at high speed near Encinitas, Cal., the car struck a soft spot and, skidding, collided with a tree. Stearns was so badly crushed that he lived but three hours. The bone of Barr's right leg was crushed and he might have survived had not gangrene set in. He died Thursday night. Both men were well and widely known in the trade on the Pacific Coast, to which Barr removed from New York City about four years ago. He had been married only eight months.

To Produce Gasolene by Refrigeration.

The Olinda Gasolene Co., which recently was organized in the California town of that name, is expectetd to begin operations next week, and because it will utilize the Cutler process it is an object of more than usual interest. The Cutler process is the reverse of that usually employed to obtain gasolene—that is, Cutler utilizes refrigeration and well pressure instead of heat and artificial pressure. It is expected that the Olinda plant will produce 25,000 gallons of gasolene daily at one-half the cost of the old process, and that by the refrigeration method it will conserve the rhigolene, mythese, etc., which hitherto have passed into the air and gone to waste.

Recent Losses by Fire.

Riverton, Iowa—Burt Manrose, garage damaged. Loss not stated.

Suffield, Conn.—James A. Bruce, garage destroyed. Loss not stated.

New Bedford, Mass.—Standard Motor Car Co., Spring street, garage damaged. Loss not stated.

Indianapolis, Ind.—Showalter Mfg. Co., 314 Hanson street, body builders; plant and 11 cars destroyed. Loss, $30,000.

Calgary, Alta.—Dominion Auto Co., store, garage, 15 cars, several dozen motorcycles and all equipment destroyed. Loss, $65,000.

Minor Business Troubles.

Samuel W. Franks, of 626 North St. Francis avenue, Wichita, Kan., has begun suit for a receiver for and an accounting from L. C. Thompson & Co., of that city, makers and distributers of a tire filler; he states that he is entitled to half the proceeds but has received nothing, that $2,000 worth of the product has been sold, and that the members of the company are unable to agree.

Edward A. Bern, a stockholder, has asked for a receiver for the Kindl Car Truck Co., of Chicago; he states that the company ceased to do business in 1906 and wants its affairs wound up.

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In the RETAIL WORLD

A. B. Sausser is about to have a garage built in Reading, Pa.

Charles Klop is about to open a garage in Arapahoe, Neb.

S. Murrish and G. Emery are erecting a garage in Magzomanie, Wis.

The Hersh hardware Co., of Allentown, Pa., has "gone into" accessories.

A new garage is to be erected in South Nyack, N. Y., for Alfred Lindsay.

The Undercliff Taxi Co., of Edgewater, N. J., has secured plans for a garage.

A new garage will be opened in Johnston City, Tex., under the style Ross & Green.

Henry O'Connor is about to erect a garage and repair-shop in Watertown, Conn.

Hastings, Neb., is to have a new garage; Milton & Tomlinson is the style of the firm.

R. P. Gailbraith, of Rock Island, Ill., has opened a garage; it is located at 112 19th street.

J. C. Kilgore has opened a garage in Waco, Tex. It is located at 622 Franklin street.

Aaron Egli, of Hopedale, Ill., has become a dealer; he has the Studebaker agency.

The Haynes Auto Sales Co., of San Francisco, has opened a branch in Fresno, in the same State.

James A. Bates has opened a garage in Harvey, Ill. It is located at 188-190 East 155th street.

George Small and Chester Dooley will open a garage and machine-shop in McFarland, Cal.

Frank Kunkel has opened a repair-shop in Effingham, Ill. It is located on West Fayette street.

W. L. Mustard, of Pocahontas, W. Va., will build a new garage; the site is on Raleigh street.

The A. K. Auto Supply Co., of Allentown, Pa., has taken possession of new quarters at 17 South 7th street.

The Oakland Sales Co., of Austin, Tex., has opened new salesrooms; they are located on East 5th street.

A. B. Morrison, of South Bend, Ind., plans to open a garage in Kalamazoo, Mich. He is now seeking a site.

The Central Garage & Machine Works, of Barstow, Cal., has been taken over by L. L. Stanfield, of Los Angeles.

H. T. Brust has completed a garage, 70 x 140 feet, in Elkhart, Ind. He also operates a large farm outside that city.

Martin Zwister, of Milwaukee, Wis., has secured permission to erect a garage on 10th street; it will cost $6,000.

J. H. Kloeber has opened salesrooms in Chicago at 2328 Michigan avenue; he has secured the Henderson agency.

The Overland Auto Co., of Phoenix, Ariz., has erected a new repair-shop; it is located on North Central avenue.

Leonard C. Mackenzie, of Bridgeport, Conn., has admitted Archibald Wolten to his garage and trucking business.

The Cincinnati (Ohio) Auto Co. is erecting a new garage on Court street; the company is a Pope-Hartford dealer.

Dorr & Sons, of Dunellon, Fla., have taken over the business of the Florida Auto Sales Co., in Ocala, in the same State.

A building which is being erected in Peoria, Ill., on Market street will be occupied as a garage by Charles S. Gorman.

Frank W. Johnson, of Eureka, Cal., has entered the trade; he has taken the Hupmobile agency and has located on F street.

The Lincoln Motor Sales Co. has opened a garage and salesrooms in Salem, Idaho, on Ferry street; W. A. Quincy is manager.

Kohn Bros., of Montgomery, Ala., have awarded the contract for a new garage to be erected on Monroe street; it will cost $100,000.

Turner & Hall have taken over the Antioch (Cal.) Garage and Machine Shop; they will increase the equipment and continue the business.

J. Fay, of 169 East 90th street, New York City, has been granted authority to build a garage on West 79th street; the estimated cost is $30,000.

The Burley Garage, located in Lewistown, Pa., on Chestnut street, has been reopened under new management; Roy Long is now the owner.

The Whittesly Garage & Machine Co., of San Benito, Tex., is having a new two-story brick garage built; it will afford 15,000 feet of floor space.

William H. Baxter, of Springfield, Mass., has moved from 163 Dwight street to a new fireproof garage on Oak street; he has the Paige-Detroit agency.

Jones & Lubbe, of San Francisco, have let the contract for a garage which will stand on Taylor street; the specifications fix the cost at $15,000.

Claude Kirkpatrick, of 5183 Poryland place, St. Louis, Mo., has secured permission to build a garage; his application named the cost as $6,000.

The Automobile & Supply Co., of Toronto, Ont., is having a new garage and store erected on University avenue; it will represent an expenditure of $150,000.

The Renault Selling Branch, Inc., of New York City, is about to erect a service station in Long Island City; it will cost $35,000 and will stand on Jackson street.

The William J. Tracey Motor Car Co., of Braddock, Pa., has opened a new garage and salesrooms at 5 Braddock avenue; the company will add a full stock of accessories.

Wilkinson & McClure, of Riverdale, Cal., have leased a garage building in Kingsbury, in the same State; they will operate a repair-shop for cars, motorcycles and bicycles.

George Wright, formerly with Wright, Barrett & Stillwell, of St. Paul, Minn., has branched out for himself. He has taken over the storage business of the Osborne Garage.

Geo. Siegmund and Harry L. Baylies, of Chicago, have formed the Siegmund-Baylies Truck Co. and have located at 2029 South Michigan avenue; they handle the Dart line of commercial cars.

Timothy K. Hayes, of Bloomington, Ill., is erecting a building at 702 North Main street, in which he will enter the trade under the style Cadillac Service Garage; he has the Cadillac agency.

J. H. McNee has sold his interest in the Grand Garage, of Santa Rosa, Cal., to Chas. N. Taylor; Taylor formerly was connected with the business of Don Lee, Cadillac distributer in San Francisco.

Richards & Christy, of Sacramento, Cal., have completed plans for a four-story brick garage to be located on L street, near 7th street; the firm was recently organized to

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take over the Studebaker automobile business in that city.

Albert C. Lusby, who has been connected with the trade in Los Angeles in various capacities for several years, has opened up as Southern California representative of the Westcott line; his salesrooms are located at 1355 South Flower street.

John W. Calder and James Eells have formed a copartnership in Utica, N. Y., to handle accessories of established reputation; they trade as Calder & Eells. They state that they have disposed of 69 sets of Velvet shock absorbers in Utica since June 1.

O. P. Perkins, former secretary and treasurer of the Whittlesey Garage & Machine Co., of San Benito, Tex., has sold his one-third interest in the company; it was purchased by C. C. Wilt, who had charge of the erection of the new $18,000 building just completed for the company.

The Michigan Motor Co., of Reading, Pa., has opened for business in a new two-story garage and salesrooms, 35 x 115 feet, at 1038-40 Court street. The manager is Geo. K. Seidle, of Bowers, in the same State. The building has an electric elevator, individual lockers for car owners who store their cars in the building, and can accommodate 30 cars.

D. D. Stewart, for several years a dealer in Evansville, Ind., has purchased A. A. Jones & Son's garage, located at 102-6 Upper Third street; A. A. Jones will return to his former home in Elkhart, Ind., and T. J. Jones will return to his former connection with the Goodyear headquarters in Evansville. The business includes the agencies for Pope-Hartford and Auburn cars and Columbia electrics.

E. E. Terrell, Albert F. Pliske and Max F. W. Pliske, of Cleveland, Ohio, have leased the premises at Euclid avenue and East 5th street and will operate under the style Buckeye Garage Co. They have had automobile establishments on Euclid avenue for nine years, having owned the Buckeye and Cooperative garages, the latter of which they sold some time ago. They are incorporating prior to opening in the new location and expect to be ready for business by August 15.

Hugh Quinn and "Mac" Wetmore have formed the Wetmore-Quinn Co. in Detroit and will handle the Paige-Detroit line; they have located at 703 Woodward avenue. Quinn, the president of the company, has been connected with the Abbott-Detroit organization for the last three years, for most of that time having been manager of the factory branch on Jefferson avenue. Wetmore, the secretary and treasurer, has been assistant sales manager of the Lozier Motor Co. for two years.

ISSUES $2,000,000 BONDS AFTER A REINCORPORATION

Prest-O-Lite Takes New Form Under New York's "Non Par Value Law" and Authorizes Bond Issue—Personnel Unchanged.

Having reincorporated under the laws of the State of New York, the Prest-O-Lite Co., of Indianapolis, formerly an Indiana corporation, has authorized the issue of $2,000,000 of bonds bearing interest at 7 per cent. The issue is not because of any stringency in the company's affairs, however, and it is stated that the amount is amply represented by actual and tangible assets.

This statement is in accord with the company's attitude in reincorporating, for it now exists under the New York "Non-Par Value Incorporation Law," which is not especially sought by those who seek to inflate their paper capitalization. The law specifies that the company shall incorporate with so many shares and not so many dollars, and while the old Prest-O-Lite Co., of Indiana, was capitalized at $10,000, the new one has 80,000 shares, the value of which is whatever anyone is willing to pay for them, this figure being fixed largely by the company's earnings.

The 80,000 shares are, however, backed up by a money capital of $800,000, which gives them a theoretical value of $10 each, and all are held by the members of the old company who, also, constitute the new one. Other assets, it is stated, are sufficient to form an ample basis for the $2,000,000 of bonds.

Return of Elgin Trophy Causes Hitch.

If the Chicago Automobile Club doesn't succeed in getting C. E. Schroeder, of New York City, to return the Elgin trophy, which was won last year by Ralph De Palma in a Mercedes car owned by Schroeder, it is likely that the club will endeavor to collect $5,000 from the cup holder and will put up a new trophy to be contested for at the next races, 29th and 30th inst. The holder of the trophy is required to give a bond of $5,000 that he will return the prize to be contested for at the next meet, and while the club holds such a bond from Schroeder, it has obtained no answer to no less than five letters it has written him.

Club to Sue Garage for Stolen Tire.

Because Rev. Frank Sheets, a member of the Aurora (Ill.) Automobile Club, was made the victim of a thief in a garage in Waterman, Ill., the club has voted to retain an attorney and bring suit against the garage owners for the value of a tire and other purloined objects. The clergyman left his car in the garage overnight and the next morning found a tire gone from one wheel and various other things missing. The proprietors refused to make good on the grounds that they had posted a sign saying, "Not Responsible for Articles Lost." Inasmuch as Sheets paid regular storage rates and couldn't have done more to protect himself unless he had chained the tire to the rim, the club is determined to make a test case and also put itself on record as standing for adequate protection for its members.

Trying to Overtake that Lozier Story.

In an effort to overtake a story which originally appeared in print in Detroit, and which was spread fast, George W. Yeoman, general manager of the Continental Motor Mfg. Co., has supplemented a denial by the Lozier Motor Co. to the effect that the former had purchased the Lozier engine plant. What really happened was that the Continental company's Detroit plant was flooded with orders and, requiring some new machinery quickly, a part of the equipment in the Lozier plant was tendered and instantly purchased. The Lozier company will continue the manufacture of its own engines.

Oakland Relinquishes Branch to Bowman.

The Oakland Motor Car Co., of Pontiac, Mich., has discontinued its branch at 1600 Broadway, New York City, and transferred its agency to the Sidney B. Bowman Automobile Co., which also assumed the lease of the Oakland store. Bowman, who hitherto has handled the Marmon car and Vulcan truck, will retain those accounts and concentrate all his sales at the Broadway address, converting his present place on West 49th street into a service station. His deal with the Oakland company carries with it a large slice of good terrirtory in New York and Connecticut.

Manhattan Electrical Buys Western Rival.

The Rock Island Battery Co., of Cincinnati, has been purchased, lock, stock and barrel, by the Manhattan Electrical Supply Co., of New York. The Rock Island brands of dry battery, however, will be continued by the new owners in connection with their Red Seal, Hi-Up, Blue Seal and Mesco dry cells.

Krit's President Goes to Europe.

Lawrence Moore, president of the Krit Motor Car Co., of Detroit, sailed last week to Europe. He will spend most of his time in England, where the Krit car is well intrenched.

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The Motor World Publishing Company
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A. B. SWETLAND, President and General Manager
F. V. CLARK, Business Manager.

EDITORIAL DEPARTMENT
R. G. BETTS, Managing Editor
S. P. McMINN HOWARD GREENE
R. W. SHERMAN

ADVERTISING DEPARTMENT
BROCK MATHEWSON, Manager
New York Office
1600 Broadway
HOWARD L. SPOHN LOUIS R. SMITH O. H. ADAMS

Western Office
1001 Ford Bldg., Detroit, Mich.
W. H. TRIPP, Mgr.

Detroit
1001 Ford Bldg.
MAXTON R. DAVIES

Cleveland
610 Superior Ave. East
C. H. HANDERSON

Chicago
Room 510 Harvester Building
606 South Michigan Avenue
H. A. WILLIAMS

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COOPERATION THAT BEARS NO FRUIT.

As regularly as the years roll around, someone discovers that the way for a lot of men to make a lot of money is indirectly to pool their interests and do business under one roof, where one salesroom can be made to serve the purposes of many and minimum stocks be carried and a minimum number of salesmen employed.

The economies which suggest themselves are so great that it is small wonder that they give pause to many of those to whom such schemes are presented; although they are practically of an Utopian character, many merchants are able to convince themselves, or at least partly convince themselves, that cooperation of the sort is one way of putting the "overhead" bugaboo to rout.

That such schemes are more promising than practical, however, is again instanced by the recent fizzling out of an ambitious enterprise of the sort in New York City, to which a score or more of automobile accessory manufacturers loaned their support and some of their money.

In theory, the enterprise sounded well, and, as none of the goods displayed were of a conflicting nature, on the surface it seemed possible that one salesroom and a few salesmen might be made to serve the purposes of several. The venture was an interesting experiment, so far as the automobile trade was concerned, and knowledge of it gave rise to similar projects in other cities, none of which, however, came to a head, so far as known.

The failure of the New York enterprise probably will put a quietus on the others, although it will not prevent annual and semi-annual redreaming of the dream, for, in truth, such schemes are little more than dreams. Likening them to department stores is a far cry. The department store, like all other mercantile establishments, stands on its own bottom and is conducted by one man for one man who has an eye single to his own interests. It is very difficult, if not impossible, to conduct business on any other plan.

Circus performers may be able to ride several horses at the same time, but no business man can do so; each must straddle and direct his own steed safely to reach a given destination, which is to say that a so-called cooperative salesroom must remain a beautiful theory. It must lack singleness of purpose, which means that it lacks individuality and that force which stands for commercial life.

The fizzling of the New York enterprise merely emphasizes that the cooperative salesroom is not the solution of the "overhead" problem.

PHENOMENON THAT REMAINS UNSOLVED.

Does an automobile motor run more smoothly at night than in the daytime? That good old question has again been revived, and despite endless discussions, there never has been given a really satisfactory answer.

Nine out of ten people who have driven cars or ridden motorcycles will declare in the affirmative, and their belief is supported by the opinions of engineers and others who maintain that in some way nightfall brings on its wings more power and smoother running. The occasional testimony of a cold-blooded scientist to the effect that there is no difference, makes little impression on the widespread belief. Therefore it is not likely that the statement of the engineer in charge of a long non-stop laboratory test of a motor, to the effect that though the outer air had free access to the engine, the records showed a difference of only 1 per cent. between night and day running, and that was in favor of daylight, will have much effect.

Various theories have been suggested to explain the phenomenon, if it really exists; but whether the increased moisture content of the atmosphere at night augments expansion of the gas, whether increased barometric pressure has the effect of forcing a greater weight of oxygen into the cylinders of the motor, whether the possible concentration of the oxygen in the atmosphere by cooling after the withdrawal of the sun's heat gives more life to combustion, or whether the truth lies in the combination of these theories or in other causes, is of less immediate and practical importance than the pertinent question as to whether or not the falling of night actually is responsible for increase in power.

If it can be definitely ascertained that there is an appreciable and measurable difference in power between night and day running, it will be well worth while to go scientifically to work to search out the reason and lay bare the governing principles. This being done, there would be available data which might be put to practical use.

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LISTEN! RUSHMORE'S HEAP OF SCRAP IRON IS ON FIRE

Or, Rather, it Was on Fire, and it Took Two Hours to Put it Out—Plainfield Manufacturer Learns Steel Chips Will Burn.

"Pig iron under water" has been described as a typically safe insurance risk, and to most persons iron or steel in any shape is equally free from liability to catch fire and burn up. Nevertheless, a recent experience of the Rushmore Dynamo Works in Plainfield, N. J., with a big pile of steel chips which actually caught fire from a blazing rubbish heap near by, shows that finely divided iron or steel may sometimes oxidize faster than it can get rid of its heat, and hence may exhibit all the phenomena of combustion. The story is vouched for by S. W. Rushmore himself.

"Out in our yard we have a big heap of steel chips from the automatic turret and screw machines, which we sell from time to time in lots of several carloads," he says in telling it. "Steel being generally considered a non-combustible, this heap is quite close to the box lumber pile.

"Saturday afternoon last, August 2, the pile stood eight feet high and contained several carloads, when the yard gang piled up alongside of it a lot of old barrels and rubbish and set fire to the latter. Of course, the steel pile got warm. Making my rounds, to see that everything was in shape before going home, I discovered smoke and flame issuing from the supposedly fireproof heap, which at several points at the bottom glowed white hot.

"The heat rapidly increased until it threatened to fire the lumber, so the watchman got out the hose and played a one-inch stream on the pile. The flames went down and I supposed the fire would soon go out, so I went home. Three hours later the night watchman 'phoned me that, in spite of the hose, the fire was getting worse, so I called the fire department, which found a lively little volcano at work. They worked on that pile of chips for just an hour with two powerful streams, and after many detonations of steam and gas, and after the whole yard had been flooded, declared the fire out and went home. At 10 o'clock Sunday morning the day watchman 'phoned me in a hurry that the fire had started again, and, sure enough, I found that darned pile a seething mass, making a weird and threatening hissing sound, but with little smoke and only thin, yellowish flames. The department was again called, and after a couple of hours the pile was cooled down and dug into until apparently dead.

"The chips are put through a centrifugal separator, and the small amount of oil remaining had nothing to do with the fire. It was a plain case of burning iron. The metal was so finely divided, and presented so much surface to the oxygen in proportion to the radiating surface of the pile, that, once started by the heat from the rubbish pile, the combustion proceeded exactly as in a pile of coal, only apparently at a more rapid rate.

"I was surprised to find that the metal had not melted. Where the fire had been hottest the chips were a dark blue. The pile sank about a third in height, and a lot of metal must have been oxidized to create so much heat. Next time I shall almost expect to see the concrete walls blaze up."

Dealers to Show at Michigan State Fair.

Instead of being a neglected quantity, as is the case at so many State fairs and industrial expositions, the dealers of Detroit are again planning to take a leading part in the Michigan State Fair, to be held near that city September 15-20; of course, no exposition near Detroit would be complete without automobiles, and 15 makers and dealers have already contracted for space. They are: Oakland Motor Co.; Cartercar Co.; M. A. Young, Reo and Mitchell; Anderson Electric Car Co., Detroit electric; Detroit-Overland Sales Co.; Siegel-Zeckendorf Co., Cole; Jackson Automobile Co.; Reed Motor Car Co.; Abbott Motor Car Co.; International Harvester Co.; Grinnell Electric Car Co.; Wahl Motor Co.; Schulte & Sons, Patterson; Keeton Motor Car Co.; Regal Motor Sales Co.

While a special building is provided for these exhibitors, such is not the case in numerous other fairs and in Fresno, Cal., the dealers are now agitating for an automobile building, that they may suitably display their wares at a coming county fair.

Ford Anticipates Price-Reduction Date.

Without inkling of its intention having escaped, and in face of official statements that its prices would not be adjusted until October 1st next, the Ford Motor Co. last week reduced the prices of its runabout from $525 to $500, of its touring car from $600 to $550 and of its town car from $800 to $750. The new figures became effective August 1st. Just what induced Henry Ford to take action so far in advance of the fixed date is a matter for speculation, but it is certain that when he decided it was advisable he acted quickly.

Chicago Pneumatic Opens New Branch.

The Chicago Pneumatic Tool Co., manufacturer of the Little Giant truck, has opened a branch in Philadelphia. It is located at 1740 Market street.



*Indicates Sanction by A. A. A.

Aug. 9, Brooklyn, N. Y.—Motor Dealers' Contest Association's track racemeet at Brighton Beach.*

Aug. 9, Santa Monica, Cal.—Santa Monica Road Race Committee's road races.*

August 9-10, Libertyville, Ill.—Track racemeet under the auspices of J. A. Sloan.

Aug. 10, Pueblo, Tex.—Track racemeet under auspices of J. A. Sloan.

August 12, Kansas City, Mo.—Kansas State Automobile Association's reliability tour.

Aug. 15-16, Denver, Col.—Track racemeet under auspices of J. A. Sloan.

August 16, White Plains, N. Y.—Track racemeet under the auspices of George T. Long.

August 20-21, Newport, Ind.—Newport Motor Club's fifth annual hill climb.

Aug. 25-28, Houston, Tex.—Houston Automobile Club's reliability tour.

August 25-29, Milwaukee, Wis.—Wisconsin State Automobile Association's fourth annual reliability tour.

August 29-30, Chicago, Ill.—Elgin Road Race Association's road races, under auspices of Chicago Automobile Club.*

August 30-September 6, Chicago, Ill.—Reliability tour of the Chicago Motor Club.

Sept. 1, Columbus, Ohio—Columbus Automobile Club's track racemeet.

September 8-13, Chicago, Ill.—Chicago Motor Club's Around Lake Michigan reliability tour.*

Sept. 9, Corona, Cal.—Speedway track races, under auspices of Corona Automobile Association.

September 12, Canfield, Ohio—Canfield Fair Association's track racemeet.

Sept. 13, Covington, Ky.—Cincinnati Automobile Club's track racemeet.*

Sept. 13, Grand Rapids, Mich.—Grand Rapids Automobile Club's track racemeet.

Sept. 20-21, Detroit, Mich.—Track racemeet under auspices of Michigan State Fair.

September —, Grand Rapids, Mich.—Grand Rapids Automobile Club's reliability tour.

Oct. 10-17, Paris, France—Annual automobile salon.

November 4-5, San Diego Cal.—San Diego to Phoenix (Ariz.) road race.

November 4-5, Los Angeles, Cal.—Los Angeles to Phoenix (Ariz.) road race.

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KEROSENE MADE TRACTABLE BY PEROXIDE TREATMENT

Smoke, Smell and Carbon Reported to Be Eliminated by Treating Oil With Peroxide of Hydrogen—Process Inexpensive.

However opinions may differ as to the past achievements of George B. Selden, of Rochester, N. Y., in the automobile industry, there hardly can be any question as to the beneficial results that will accrue to all concerned if the experiments now being conducted with a new fuel—or, rather, a fuel treated in a new way—are carried to a successful conclusion. Selden's fuel consists of kerosene treated with peroxide of hydrogen, and the statement is made that the process can be carried out for little more than the bare cost of handling the kerosene. This would seem effectually to settle the price question.

The experiments are the outcome of Selden's observation, made many years ago, that hydrocarbons of the paraffin series, which include kerosene and gasolene, absorb peroxide of hydrogen in considerable quantities, forming a compound of stability, differing somewhat in color, specific gravity and flash-point from kerosene. But most interesting is the statement that when vaporized the oil burns freely and completely in the cylinders, forming no deposit and causing no smoke or smell in the exhaust, and that carburetters of ordinary construction can be used, provided they are capable of a rather wide range of air adjustment, and that heat from the exhaust gases from the motor may be utilized.

One test was made burning peroxidized petroleum distillate in the motor of a 40-horsepower touring car which weighed, with its passengers, 4,600 pounds. A gallon of the fuel carried this car 12.7 miles in 24 minutes without smoke or odor from the exhaust, the machine running on high gear all the time. The muffler was used throughout the test.

Not only is peroxide of hydrogen efficacious in assisting the clean combustion of fuel, but when mixed with lubricating oil it is said to have the virtue of preventing smoke and sooty deposit. Selden states that one of his cars has been run for some 1,500 miles on "peroxidized lubricant" without forming sufficient deposit on the spark plugs to soil a white handkerchief, though it is not stated what fuel was burned. Gasolene and other petroleum products are susceptible of treatment by the peroxide process, as well as kerosene.

When peroxide of hydrogen is decomposed by heat large volumes of oxygen are liberated, the peroxide containing twice as much oxygen as does water. This access of oxygen is responsible for the clean combustion obtained with the compound. Oxygen, which is the principal item in the peroxidizing of fuels, can be produced, it is said, for about $2 per thousand cubic feet, and for this reason the treatment of fuel by the process which Selden has brought into prominence can be carried out at a comparatively trivial expense.

Thirteen Enter for Santa Monica Race.

When entries closed, July 31, for the Santa Monica road race, to be held at Santa Monica, Cal., 9th inst., 13 cars had been listed, but none of them will carry this supposedly unlucky number; it has been dropped from the list. The drivers and cars are: G. Morris, Mercer; W. W. Bramlette, Apperson; Barney Oldfield, Mercer; Teddy Tetzlaff, Fiat; Louis Nikrent, Mercer; McConnor, Speedwell; D. Lewis, Fiat; E. Cooper, Stutz; J. Ophahl, Buick; C. P. Soules, Cadillac; F. Goode, Apperson; T. R. Bramlette, Cadillac; F. Siefert, National.

Carnival Profitable to Perry Dealers.

A carnival and tournament which was recently held in Perry, Ia., brought much business to the Rude Auto Co., one of whose men was kept busy all the week filling gasolene tanks; at the end of the week the company found it had disposed of 1,410 gallons, and other garages, also, recorded big sales. At one time there were 45 cars parked around the Rude garage, which was quite a demonstration, considering that the population of Perry is but 4,360. The dealers apparently were awake to the opportunity and several cars were sold.

Drunken Drivers Now Must go to Jail.

The fact that William Brecka, 26 years old, a truck driver in Newark, N. J., was convicted this week and sent to jail for 30 days for driving his truck while intoxicated was the first most people knew that a law had been passed in New Jersey making it mandatory upon a judge to impose a jail sentence upon a man arrested for driving an automobile or any other vehicle while intoxicated; the law provides penalties of from 30 days to six months and a fine is not optional. Brecka worked for a firm of wholesale butchers.

Hughes Injured When Car Overturns.

While driving a racing car on a country road southwest of Tulsa, Okla., Thursday last, 31st ult., Hughie Hughes, well known as a racing driver, sustained injuries when his car turned over; he was bruised about the body, but not so seriously, it is stated, as to incapacitate him for more than two weeks.

UNION CHAUFFEUR CHARGED WITH USING "STINK BOMB"

Taxicab Owner Says Union Men Bombarded His Car in Front of Chicago Restaurant—Union Officer Held for "Loitering."

If the charges of the American Automobile and Taxicab Owners' Association, of Chicago, are true, the Automobile Drivers' and Chauffeurs' Union, Local No. 327, has taken to throwing bombs as a means of intensifying the strained feelings now existing between the two organizations; the news, however, need alarm no timid person and prevent him taking a trip to Chicago, for thus far no one has been blown up. Someone is likely to be "blown up," however, if P. C. Kohler, secretary and treasurer of the owners' association, finds the man who threw a bomb into his car one night last week, while he was in a restaurant.

The bomb blew up, but the car was not damaged, all of which is accounted for by the fact that the missile was what is known in street parlance as a "stink bomb" and consisted of a thin-shelled, glass affair about as big as a marble and filled with an odoriferous substance, probably hydrogen sulphide, which is as near as the chemists can come to imitating rotten eggs. It might also be added that the imitation is very good and that a car that has been "bombed" now is decidedly unpopular.

Kohler claims the offence was perpetrated by or instigated by the union, and he has caused the arrest on a charge of loitering of Edward Reilly—not Motor World's Reilly—business agent of the union. Reilly is charged with having been loitering near Kohler's car a few minutes prior to the time the "bombardment" occurred.

Gets Bill by Trick and Parcel Post.

Collection agencies are likely to lose considerable business if dealers and garagemen follow the practice of a Kansas man who proceeded to collect several small accounts of long standing as soon as the Parcel Post C. O. D. regulation went into effect, July 1. The accounts were regarded practically as a loss. This merchant wrapped up several neat boxes of waste paper, made the proper C. O. D. arrangements and proceeded to collect the back accounts through the post office. Inasmuch as the recipients of the parcels could not see what was in them until they paid for them they did not realize the trick until too late. Just how business-like this is and how it will affect the merchant's standing in that business community, however, is something else again.

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STUDY OF COSTS ESSENTIAL

Unless Expense of Running Business Is Ascertained Profits Cannot Be Assured—Man Who "Guessed Twenty Cents Was Enough."

At a small Canadian town a rear spring hanger on the automobile broke. It could not be repaired. The body of the car rested on the rear axle on one side. The only thing to do was to block it up and drive the 60-odd miles to the factory in Detroit. The little town boasts of only one place where help could be secured. It is a blacksmith shop. The proprietor was a white-haired old patriarch with a full flowing beard. He reluctantly consented to help.

He took a block of wood, measured the space, cut it accurately, drilled two holes in it to take care of two bolts on the axle, slotted it to adjust it to other conditions, and then wired it securely on. It was a good job and it stood up. It took about an hour to fix it up, there was so much measuring and fitting to do. "How much?" asked the automobilist, fully expecting to pay a dollar or more. "Twenty cents will be about right, I guess," replied the blacksmith. "Twenty cents!" exclaimed the automobilist. "Why, that's not enough. Here, keep this half-dollar." It was all he could do to persuade the old man to take it.

Knowledge Necessary to Money-Making.

The old man "guessed it would be about 20 cents." And that is one of the reasons, beyond a doubt, that, at an advanced age, he is still running a country blacksmith shop. And guessing instead of knowing will keep any business man down and absolutely prevent him making money and being hugely successful. There are altogether too many garagemen "guessing." The day of guessing is past; knowing is necessary, if money is to be made. "Breaking even" is not a real answer. You cannot be satisfied with such a tame game. You must forge ahead.

That means one must keep track of things—must get them down in black and white where he can refer to them; must look at the little things as well as the big; must realize that if he makes $400 on the sale of a car he loses, say, 30 cents if he give a man three gallons of gasolene in his car when it contained only one gallon when he brought it in to have his tank mended. Someone must pay for those two extra gallons. He did not charge the customer for them; who pays? And that rear axle was doped with grease; how much was used? Was it four pounds or five? If it was five and you only charged for four, who pays? And that fan belt you put on the other day; you guessed it was about 50 cents for the belt and about a quarter for putting it on. How much time exactly was consumed putting it on? How much did it cost you?

Add Rent, Light and Overhead to Cost.

Was a share of rent and light and heat and selling expense and all the rest that is known as "overhead," added to your cost? Have you got it figured out, or did you just price it 50 cents because the factory listed it at that? It won't "all come out in the wash." To know what a job costs you you must know every item of time and material that went into it. Not "nearly" every item, but exactly every item. It is the only way you can arrive at an accurate cost and add a "profit" that you know is a profit.

Half the complaints about unprofitable business can be traced to inaccurate, inadequate records—and records that are not kept up to date. Guessing is a costly procedure in business. The man who makes money these days knows. He doesn't "figure" that things are worth so much; he knows. If you know what labor costs, what your "overhead" is, what material costs, what selling expense amounts to, what your profit should be, and add it to the rest, you will be sure to make a profit. Unless you do know these things it is a case of waiting for the end of the year to find out. You may be too far gone then. You should know what you are doing on every sale. It is the only way you can be sure you are not like the blacksmith.

THE SHOW CASE AND THE GOODS DISPLAYED THEREIN

The man who discovers for himself that "goods well displayed are goods half sold" has learned a merchandising lesson that is of vital importance. The appeal to the eye is a direct, powerful appeal that captures business when every other form of appeal is silent. There is something about a showcase that arouses the interest of everybody who sees it. Our first thought is "What's inside?" and we proceed to look and find out.

Valueless goods are never put in show cases. The man who cares nothing about the goods he sells will never be bothered with a show case. Fly-specks and dust that depreciate the value of goods will be his portion—but he will not care, because how the goods look is of little interest to him. Brass goods should be kept in show cases where they will not be handled except by the really interested prospect. The same thought applies to nickeled goods of all kinds. And it is worth while remembering that a show case not only protects goods against dirt but also against theft.

If you sell accessories, get a show case and display them. It looks as if you were a merchant . . . and were not ashamed of it. Besides, it pays to display merchandise in show cases because people see the stuff and they want it. The jeweler used to be the largest user of show cases. Now they are used in every line of business—even the clothiers hang their clothes in a show case instead of piling them on a counter. It pays. That is the answer to the showcase. It is a profitable investment. It pays.

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"STICKING TO IT" THAT WON

Salesman Who Took Eight Years to "Land" a Customer—Also, the Salesman Who Lost Out Because He Didn't Give a Square Deal.

For eight years a salesman had been calling on a certain New England dealer. The third year he managed to sell him a small bill of goods amounting to exactly $16. Five more years elapsed. He had never been able to get another order.

The dealer was one of those honest, faithful souls who believes in sticking to a line as long as he gets square treatment from the manufacturer or jobber who sells it. He grew to like the salesman, but it seemed impossible for the two to do business. There was no advantage of price or terms to be offered.

Called On the Dealer On Every Trip.

The article was a staple one and the dealer was honestly satisfied with the product he had been getting. The case seemed hopeless. But each time he "made" that town the salesman called on the dealer. He was making a friend of him, if he could not make a customer of him.

Eight years is a long time to call on a man and get but one $16 order. One day when the salesman called he found the dealer busy talking to a man. He seemed to be neither a salesman nor a customer; so the salesman thought he would not wait but would just say "Good day" and proceed about his business. "Wait a minute; I've got to go out, but I will be back in a jiffy," exclaimed the dealer.

At Last the Order Was Secured.

The salesman thought he detected a note of encouragement that he had never heard before in the dealer's voice. He waited. When the dealer came back he said, "Mr. Myer, do you honestly believe the goods you are selling are any better than the line I have been handling?" "Well, they are at least as good; as to whether they are better or not, I am going to leave that to you. Just a minute, and I will let my samples talk and you can make your own comparisons."

He placed his samples on the dealer's desk and then, skipping all ordinary details, proceeded to emphasize one feature where, to use the salesman's language, he had "all the rest skinned a mile."

It took a trifle less than half an hour to write up a $1,600 order for immediate shipment and receive the voluntary promise of another one, just as good, for six months later.

Dealer Explains Why He "Switched."

"I suppose you wonder why you should suddenly get this order to-day when heretofore you haven't had even a look-in," remarked the dealer. Myer admitted he was naturally curious, so the dealer continued: "I told you I would stay by the Blank Co. so long as they gave me a square deal; and I did. Just a month ago, when their new man, Mr. Brazer, was here, he asked me some questions that made me suspect he was going to try to sell his goods direct to the city. I asked him point blank if such was the case, telling him at the same time that my order, just given him, included practically everything the city would need in his line.

Brazer told me he was just asking for information for their records. That he lied was demonstrated two weeks later. I don't know what made me go down to the freight depot that morning, but I did go, and you can imagine my amazement, when with the teamster I went to check up the packages, to find, right beside our stuff a box from Blank's addressed to the city purchasing agent. I knew at once that Blank had sold the city direct. So I left our shipment there "Refused" and wrote Blank's that it was subject to their order and told them why. I had no further confidence in that firm and immediately thought of you, and have been holding this order for you ever since."

This story emphasizes two facts that every successful salesman, no matter what his line, will endorse: First, it is absolutely necessary to give every customer a square deal every time. Second, sticktoitiveness is bound to win.

MAKING THE MOST OF THE NEWLY-ARRIVED NEW MODEL

What are you doing to rivet attention on the new model that has just arrived? Does everybody know it has come? It is possible that the splendid new stuff can get into your store and everybody not know about it? When you are brimful of enthusiasm over the various refinements and improvements, before you have grown so accustomed to them that you cease to consider them interesting, that is time to point them out to everybody. People recall where they saw a certain feature first. They like the prestige that early knowledge gives them and they will say as your competitor praises up his car, "Oh, yes; that is the same feature they have in the new ——— car."

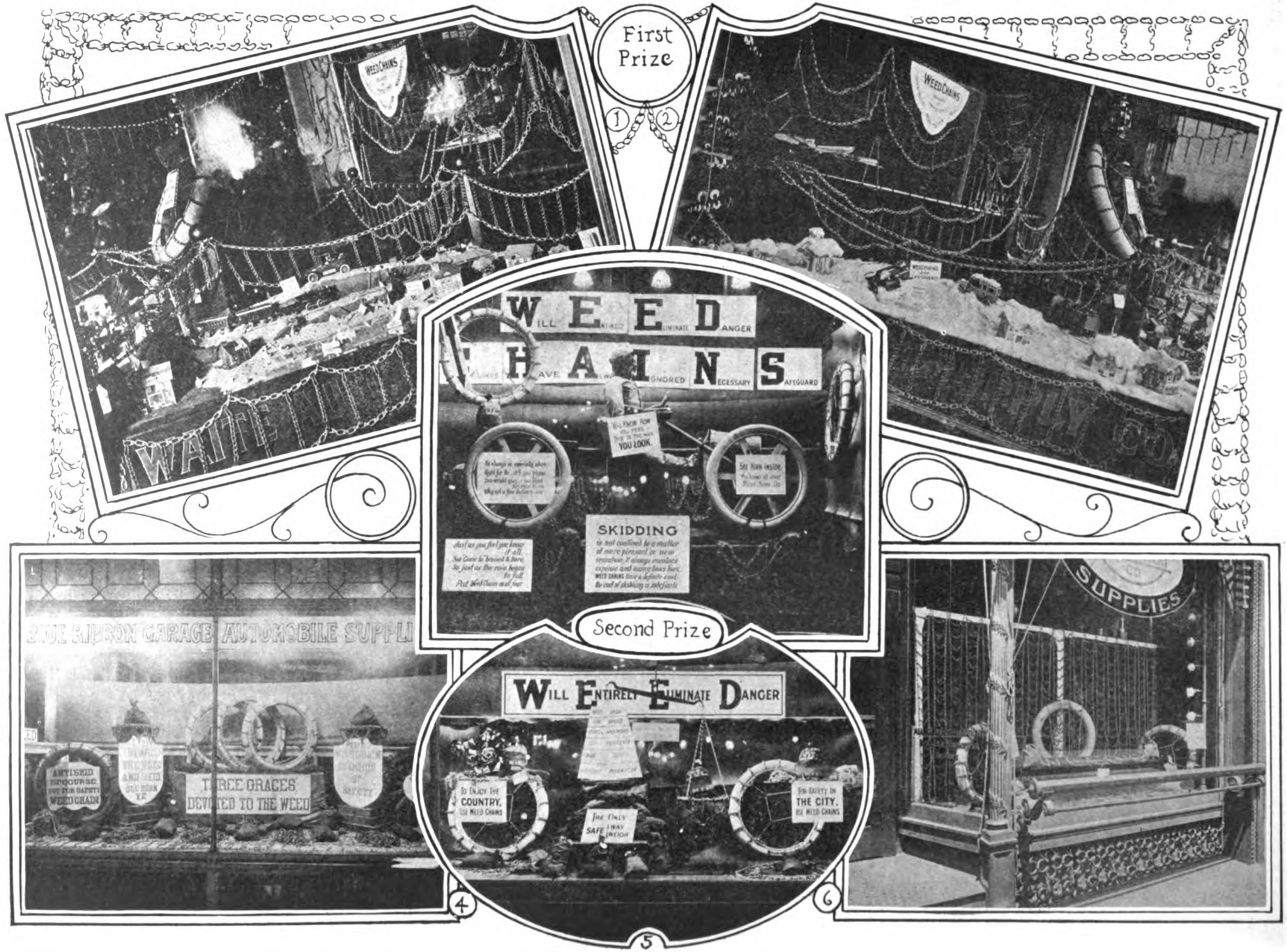
And what they say to your competitor they will say to their friends who may chance to praise a certain car they have seen. And every time they repeat it they come nearer to selling themselves. "Make hay while the sun shines" surely applies to the opportunity that beckons to the dealer with the new cars on his floor.

Watch the Indicator and Beat Rival.

Keep your eye on the indicator. Take a look the first thing in the morning, last thing at noon—after lunch and before you go home at night. The days are strenuous and you have got to know you cannot let the other fellow beat you to it.

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RESULTS ACCOMPLISHED BY SUPPLY AND ACCESSORY DEALERS IN WINDOW TRIMMING CONTEST PROMOTED BY WEED



1 AND 2, WAITE AUTO SUPPLY'S MINIATURE VILLAGE. 3, BANISTER & POLLARD'S "LOPSY" DRIVER AND SKIDDING CAR. 4, THE BLUE RIBBON GARAGE CLEVER AT MOTTOES. 5, WEED CHAINS OVERBALANCE ALL OTHER SAFEGUARDS WITH DAYTON & WALKER. 6, SIMPLICITY CHARACTERIZED POST & LESTER'S DISPLAY

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DISPLAYS OF WEED CHAINS THAT WON DEALERS PRIZES

Ingenuity in Window Trimming Characterizes Contest Results—Waite, of Providence, Reproduces Village in Miniature.

Not only are a number of accessory dealers richer because of the attention they drew to their stores by effective window displays, but a dozen of them have received checks from the Weed Chain Tire Grip Co. as prizes given in a window trimming contest promoted by that anti-skidding organization last month, the awards for which were made last week. The prizes, as stated in Motor World last week, were: 1st, $100; 2nd, $50; next 10, $10.

First prize was won by the Waite Auto Supply Co., of 17 Dorrance street, Providence, R. I. The Waite display involved considerable ingenuity and effort and won on its excellence, and the lesson it taught the public through the presentation of a miniature village with numerous accidents and prevented accidents because of the lack of and use of Weed chains. The Waite window is at the point of a triangle and has three street frontages of about equal length, the two side views being shown in an accompanying illustration.

A chain-equipped tire reposed on a pile of chains in bags in the center of the background and chains were strewn about as trimmings. The picture at the left shows several houses of a railroad; above the railroad and running down to a grade crossing is a highway from which a car, not Weed-equipped, has skidded off into the path of an approaching train. Another miniature automobile, chain-equipped, remains in safety on the road.

The other side of the window represents a snow scene in which a car has met disaster because it did not use chains, while a big limousine is making easy progress through the snow with its anti-skid equipment. The little houses add realism, and the Waite display won the attention its excellence merited.

While the second prize winner, the window of the Banister & Pollard Co., of 206-8 Market street, Newark, N. J., does not show up so well in the photograph, it incorporated much of its effectiveness in movement, which does not photograph. The automobile, which forms the principal piece, and in which is a "lopsy" sort of driver, had each wheel muonted on a roller skate and the skates rested on a glass plane.. A cleverly constructed mechanism caused this plane to move sideways and the car skidded in a "terrifying" manner. The driver swayed from side to side, while a placard said, "You know how you feel; this is how you look."

Some member of the firm must be possessed of a poetic instinct, for a sign on the rear wheel of this marvelous car read, "It's always so especially when, Right for the curb you plow; You'd give a hundred for them then, Why not a few dollars now?" Another poem was, "Just as you feel you know it all, You come to bruised and sore; So just as the rain begins to fall, Put Weed chains on all four." The front wheel invited the public to "See Kirk inside; he knows all about prices, sizes, etc."

Three of the equally good ones in the list of $10 winners were the displays of the Blue Ribbon Garage, 283 Fairfield avenue, Bridgeport, Conn., the Dayton & Walker Hardware Co., Paterson, N. J., and Post & Lester, 223 Columbus avenue, Boston, Mass.

The Blue Ribbon centerpiece was three chained tires labeled, "Three Graces, Devoted to the Weed," and was surrounded by a neat arrangement of chains and placards. The Dayton & Walker display contained a clever motto and a balance which moved slowly up and down; one side carried a bag of chains and other a pyramid of blocks bearing such words as, "Slow speed, wise guy, never-skid, and ordinary precaution," but the chain always overbalanced the bigger load. Grass, flowers, etc., on a tire at one side called attention to "Safety in the country," while at the other side was emphasized "Safety in the city." The balance was labeled, "The only safe way (Weigh)."

The Post & Lester window was a simple but effective draping of chains at the back and a clever scheme of trimming with the word "Weed" arranged with cross-chains on a glass shelf.

Club Offers to Build Subway Garage.

Since the South Park Commissioners, of Chicago, reported unfavorably on the proposed subway garage in Grant Park on the grounds that the project would cost too much, the Chicago Automobile Club now has offered to build a garage itself; the entire plan included ten sections, each costing $125,000 and housing 225 cars, and the club offers to construct one section if the commissioners will permit. The club proposes to pay for the garage out of its earnings and then turn it over to the city gratis. It is estimated that the total expenditure would represent $500 for each car space and that the annual earnings per space would be $23.63 after the deduction of interest on a sinking fund to wipe out the indebtedness in 20 years. The garage was proposed to relieve the parking congestion in Michigan avenue.

QUALITIES OF SALESMAN AS VIEWED BY MAN WHO SELLS

Salesman One Who Can Put Thought into Immediate Aggressive Action —"Not What You Say but How You Say it," Says Another.

What is a salesman? What are the qualities which are possessed by the leaders in the profession? What is responsible for the failure of one man and the success of another? These are questions which have been asked ever since salesmanship began to be recognized as a field in which there is unlimited scope for the man of ability, and while the study of methods of salesmen who are successful is productive of valuable information, this takes time; next best probably is inducing the salesman to tell those things of which knowledge is desired.

Garnering these gems of selling knowledge and the producing of greater efficiency in the sales force as a whole is the object of the many sales conventions that are held every year by manufacturers, and some of the expressions of salesmanship that were evolved at a recent gathering of National Cash Register workers are incorporated in that company's weekly organization newspaper. As to what constitutes a salesman, A. C. MacMahon said he didn't think Noah Webster, who wrote a dictionary, was a good one.

"What is a salesman? Noah Webster defines a salesman as a man who sells things. I do not believe that Noah Webster was a good salesman," he said. "I believe a salesman is a man who has the power of thought and can put that thought into immediate aggressive action.

"Salesmanship is a science, because science is simply classified knowledge. What have we got to do when we go to see any man? We must get his attention. We must do something else. We must get his interest. Then we must get his desire, and, fouth, we must get his resolve. After you have secured his atention, you create an interest in his mind. That interest must be put into desire and that desire must be crystalized into resolve before he will possess your article.

"Know your goods. That is the most important.

"It is not what you say, it is how you say it.

"I believe enthusiasm properly defined is not the noise you make. It is something in salesmanship that is within you. You feel it and you want to impart it to the other fellow, because to sell him he must feel the same as you. because that is selling.

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He says no, and you say yes. He must think the same way you do, however, before you can sell him.

"One of the most essential things is to get your heart in your business, and when you have gone over all these things, you have what? Success. Success is secured through work, work is secured through knowledge and knowledge through enthusiasm, and that in all spells success.

"A man has two roads to go in any business, I don't care what it is, but they read differently. One reads success. The other one reads failure. If you went to a hospital to-night, they'd take your temperature when you go in and they would take your pulse. They would put a chart over your bed, which reads 'success' and 'failure,' and remember this, that no man on earth ever took this road straight across. You have got to go one way or the other.

"We are a part of all we have met—we get ideas from each other. My idea is to get all the good we can out of every individual, and then collectively, and then sort these ideas over and then you have science which is classified knowledge."

"There are some things in selling that are really important and that I think some of us overlook occasionally," said W. A. Outten. "We have always been taught that health, industry, knowledge, ability and honesty go to make up the successful sales agent. I believe that the important thing that we overlook and that many men do not seem to grasp—and before you go in to see a man just think of it—is the word 'Confidence.' When selling goods we should sell ourselves first.

"When you speak to the prospect you must speak with confidence, because you know you have the very best proposition in the world and you can prove it to him."

"In selling, I believe that to a great extent the success of the sale depends on the approach," was W. J. Macauley's opinion. "Now, in the approach I believe that a man to be a success in this business must make himself a student of human nature. He must understand men, and, of course, we only get that by mixing with them and studying them. You can judge a man by the way he talks, the way he holds his head, the look in his eye and the way he holds himself. You must meet him on his own ground."

Indiana Law for Protection of Dealers.

Indiana now has a law which aims to protect the dealer and garageman in that it gives him a lien on any car for which the car owner has purchased supplies or upon which he has had repairs made and has not paid for them; as a result, buyers of used cars are looking up the standing of automobiles which they intend purchasing.

MISSTATEMENT OF FACTS ON TRUCKS AND HARM IT DOES

Wilful or Thoughtless Tales of Salesmen Discredit Industry, Says Timken—"Figures" that Cause Return to Horses.

John Jones & Co. have decided to buy a motor truck. It is up to some one connected with the firm to get the facts about the different makes that the company cares to consider, says the Timken Magazine.

One big, important thing this man should keep in mind is the unfortunate tendency of some salesmen to overrate the trucks they sell. In an effort to convince the buyer that he is really getting more for his money in the way of load capacity, these men often make statements that are physical impossibilities for the truck to back up.

Beware of the salesman who says something like this: "This one-ton truck of ours, Mr. Blank, is really an exceptional buy. While it is rated and sold at the price of a one-ton truck, I can refer you to a number of concerns that are using it to carry 1½-ton loads.

"The truck that you examined a few moments ago is rated at two tons, which is positively ridiculous. Two months ago I sold one of those two-ton trucks to Blank & Co. and I know positively they have been hauling three-ton loads every day since it went into service."

Pure bunk, you say; we grant you that, but the sad part of it is that so many suckers are born every day. An argument of this kind, like a gold mine, gets nine out of ten men who don't realize they are being buncoed until it's too late to holler for help.

Analyze the thing if you will. How many truck manufacturers do you know who could afford to build a two-ton truck, rate it as a one and sell it in competition with the other fellow's one-ton truck?

On the other hand, the builder who is foolish enough to rate a two-ton truck at five tons is courting certain disaster. True, the truck might carry five tons for a short time, but when it breaks down, how much would you give for the manufacturer's reputation?

Nothing is more harmful to the motor truck industry than this wilful misstatement of facts. It reflects not only on the manufacturer but on the industry as a whole.

We are just old-fashioned enough to believe that the one fundamental, basic principle for success in every business is to sell your customer what best answers his requirements. Either sell him the truck he should have or don't sell him any at all.

Sales made on that basis will mean repeat orders because your product will live up to your claims and the user will be satisfied. The other method leads to sure dissatisfaction and throws future orders into the hands of competitors.

Our one regret and this protest on the part of the Timken companies is due to the fact that in hundreds of cases the unwary buyer becomes convinced that motor trucks are unreliable. He, therefore, returns to the horse and wagon and fewer trucks are sold, consequently less axles and bearings are needed and, though innocent ourselves, we share the loss of what might have been.

Waterloo Horses Are Cars' Waterloo.

Maybe it is because horses in Waterloo, Iowa, are more mischievous or less well fed than horses in other parts of the country, or maybe the make of cars in use in that town is of a more edible variety, but in any event the motorists of Waterloo are registering a vigorous complaint with the municipal authorities because they object to having delivery wagon steeds lunch off the backs of the cars; the car owners say that they pay a tax where the horse-drawn wagon pays none, and that it is manifestly unfair to permit a spare-ribbed animal to stop behind a car and sample the top or the upholstery. Some of the horses seem to prefer tops and upholstery, while others have evinced pleasure in seeing how much paint they can scratch off the back of the tonneau while their drivers are in the stores or residences.

Builds Whole Car in the Show Window.

Believing that the public is inquisitive, if not interested, as to things purely mechanical and that an exposition of the oftentimes mysterious "insides" of a car can be used effectively as a means of attracting attention, the Standard Motor Co., of Baltimore, Maryland distributer of Cadillac cars, recently drew crowds to its store by building a car in the show window. The car was assembled from parts carried in stock and the process was watched with interest by the public. Not only did the "stunt" excite interest and enlighten the spectators as to what building a car means, but it was an efficient demonstration that the company carries a parts stock that is complete.

London Experiments with "Owl" 'Buses.

"Owl" street cars are common in all live cities, but London now has "owl" omnibuses of the motor-driven type; these recently were put into service between the Liverpool street station and the Crown Hotel, Cricklewood, and if the experiment is successful the service will be extended to other districts.

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KEROSENE CARBURETTER WITH INTERNAL FLAME

Radical Method of Handling Heavy Fuel—Cold Motor Started on Kerosene—Vapor Burns Without Smoke, Smell or Sooty Deposit—Remarkably Smooth Action Obtained and Double the Mileage of Gasolene.

It is generally conceded by those who have spent time and acquired experience in the kerosene carburation field that the application of heat at some period of the travel of the fuel from the tank to the motor is a sine qua non. It also seems to be a very hard fact, however, that the application of heat must be carried out with extreme delicacy, for if there is insufficient heat the process of vaporization is but slightly furthered, while if there is too much heat a chemical action known as "cracking" takes place, the kerosene splits up into its components and the result is poor combustion, an odoriferous exhaust and an abundant deposit in the combustion chambers and other parts with which the vapor comes into contact. A vapor formed with the aid of an insufficient amount of heating is easily condensed and deposited on the walls of the combustion chamber. In all cases it is necessary to heat up the motor by starting on gasolene, except where extra heat is supplied by external means, such as a blow-torch, an electric heating or some other device.

Flame Changes Character of Vapor.

To those who are familiar with the more conventional lines of endeavor that are followed in many attempts to solve the kerosene carburation problem the idea of applying heat by starting a fire, so to speak, in the middle of the mixing chamber of the carburetter itself, doubtless appears revolutionary, if nothing worse; fire in or about a carburetter is a thing commonly and assiduously guarded against. Yet it is by this very proceeding that Alex. T. Porter, president of the Oil Utilities Co., of 171 Broadway, New York, has succeeded in producing a kerosene vapor that differs widely from vapors formed by more familiar processes. It is literally true that, while the carburetter is in operation, there is a small but active flame constantly burning in the mixing chamber and visible through a small window provided for the purpose, and without this flame the device fails utterly of its purpose. Before describing the construction of the apparatus it will be of interest to describe some of the results of its peculiar action.

While the carburetter in actual service is operated in the usual way by atmospheric pressure or, in the popular parlance, by the suction of the motor, the carburetter employed on the bench to show the principle of operation is worked by compressed air, the office of which is to atomize the kerosene as the initial step in the process. The atomized kerosene, which is the ordinary commercial oil, issues in a spray that rapidly condenses on the finger and drips off—



PORTER KEROSENE CARBURETTER

that is, without the application of the internal flame. The instant the flame is started, however, the characteristics of the vapor are entirely changed. Without the slightest appreciable delay the spray becomes a thick, white vapor, strongly resembling heavy steam in appearance, and the most interesting thing about it is that it is decidedly difficult to condense. It floats about in the air like smoke, and disappears in the same gradual way.

Experiments With Bottled Mixture.

The pure vapor, close to the discharge pipe, cannot be ignited with a naked flame. Further out, however, where there is an admixture of air, it can be ignited with a match, when it burns with a reddish flame which soon extinguishes itself. It is notable, however, that the flame gives off no smoke whatever, produces no deposit and has no perceptible odor. The same proceeding in the case of the raw spray of kerosene results in the usual smoke, smell and shower of small particles of black carbon in the air.

The vapor is easily caught in a wide-mouthed bottle held over the discharge pipe of the carburetter, and despite the coldness of the glass walls, remained visible in the bottle for 14 minutes by the watch. Porter states that the temperature of the bottle seems to have little, if any, effect in hastening the condensation of the vapor, and that experiments conducted in the coldest winter weather, with the thermometer far below freezing, indicate the stability of the product of the device; in fact, he states that a bottle brought in from the frosty air, filled with vapor and immediately set out in the cold retains the white fog just as long as if the temperatures were at summer figures.

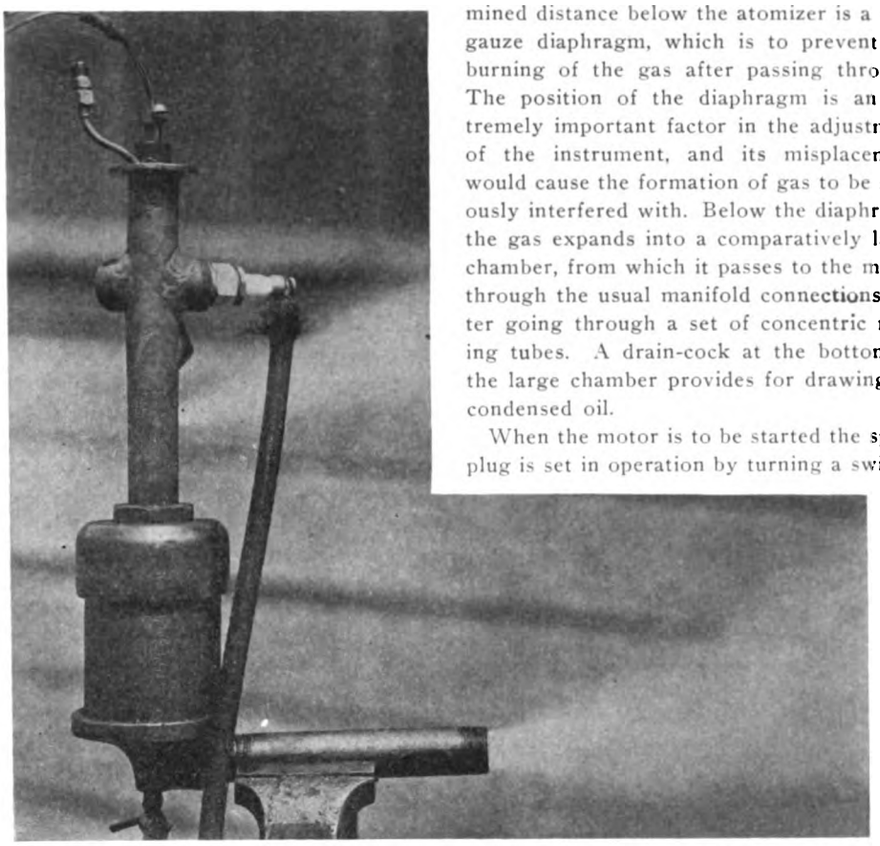
Starting Cold on Kerosene.

If a bottle of the white vapor is opened for a moment and a little air admitted, a match applied to the mouth will ignite the mixture, which will burn very rapidly and with a slight puff of flame. There is absolutely no sign of smoke, however, or of deposit of any sort. A well-polished bottle of one quart capacity—a common milk bottle, in fact—in which vapor was burned perhaps a dozen times showed no sign whatever of deposit or smoke, though as a matter of course the mixture was a haphazard one and combustion was obviously slow, as such combustion goes.

The conclusions naturally drawn from these demonstrations are that by Porter's method it is possible to produce a kerosene vapor that is sufficiently stable to withstand condensation considerably longer than is necessary to get it into the cylinders of a cold engine and ignite it; in other words, that with the Porter carburetter—if such a device may be called a carburetter—it is possible to start an absolutely cold motor on kerosene alone. Further, it would appear that under normal conditions combustion should take place without smoke or odor and without leaving deposits in the cylinders. And it may be said that the actual operation of a carburetter on a car bears out these conclusions. The motor starts, when dead cold, on the kerosene vapor at least as easily as on gasolene

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There is this difference between gasolene and kerosene, however. Judging from the running of the motor, the kerosene burns more slowly than gasolene, there being apparently more gradual expansion and less



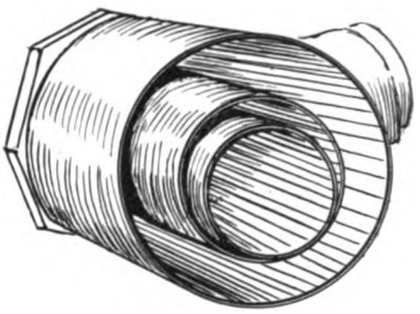
EXPERIMENTAL VAPORIZER IN ACTIVE OPERATION

of the explosion effect. The correctness of this would seem to be borne out, in a measure at least, by the fact that the motor will throttle down to a lower speed than with gasolene and will "hang on" when climbing a grade on high gear in a way that is rather surprising. There is a softness of action in the motor that is quite perceptible. Porter states that while the speed of combustion is quite sufficient for all ordinary purposes, when a motor is raced to an excessive speed the power falls off sooner than with gasolene.

As to the construction of the carburetter, it is decidedly simple, but the simplicity is the result of a long series of experiments which ran through complications almost without end and entailed a vast amount of labor in eliminating that which was useless or unessential. The accompanying illustrations show the internal arrangement of the device. The kerosene enters at the top, together with a small amount of air, the arrangement being exactly similar to that of the common atomizer. Below the atomizer, which is in a separate head fitted to the body of the carburetter, are the main air inlet, which is fitted with a spring-actuated auxiliary air valve of the usual type; the spark plug, which is maintained in operation as long as the carburetter is working and ignites a small portion of the sprayed fuel; and a little mica window through which the flame can be seen. At a carefully determined distance below the atomizer is a wire gauze diaphragm, which is to prevent the burning of the gas after passing through. The position of the diaphragm is an extremely important factor in the adjustment of the instrument, and its misplacement would cause the formation of gas to be seriously interfered with. Below the diaphragm the gas expands into a comparatively large chamber, from which it passes to the motor through the usual manifold connections, after going through a set of concentric mixing tubes. A drain-cock at the bottom of the large chamber provides for drawing off condensed oil.

When the motor is to be started the spark plug is set in operation by turning a switch; a separate coil and set of dry cells are used. The motor is then cranked. Suction draws down and atomizes the oil, the spray being ignited the instant it comes in contact with the spark at the plug points, which are located directly under the atomizer. The volume of atomized oil and the speed of travel are such that only a very small quantity are consumed by the flame—approximately two per cent., as nearly as Porter has been able to figure it. At the gauze diaphragm the flame is totally extinguished and the gas passes on to the motor.

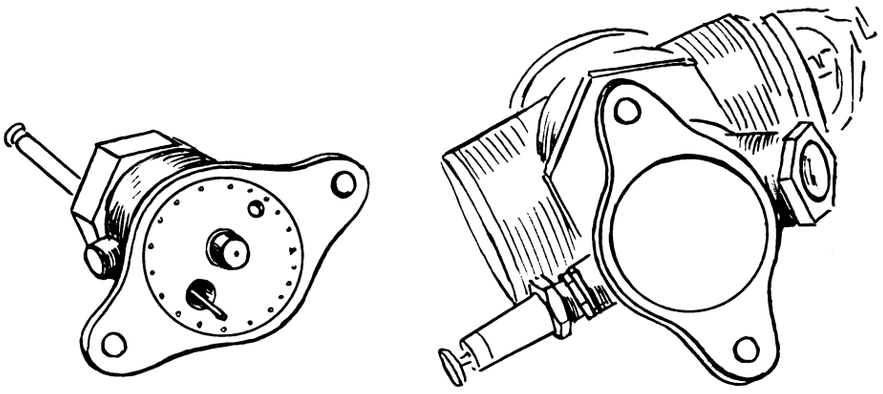
It is noticeable that the gas is not a hot gas. Coming from the outlet of the bench



CONCENTRIC COOLING TUBES

demonstrating device, its warmth is scarcely perceptible to the hand; the intake manifold of the motor running on kerosene is warm only to an extent that is attributable to the travel of heat from the cylinders. With reference to the plug and its constant sparking, it is stated that the carburetter often will work for long periods without the extinguishment of the flame, but that its going out for any reason is followed by the failure of the carburetter to work and the stoppage of the motor. The elimination of the constant sparking is the object of work now in progress; in any case, however, it is not a matter of great moment.

Perhaps the most striking characteristic of the vapor produced by the Porter apparatus is that it seems impossible to make it smoke or form a carbon deposit. In view of the familiar and aggravating tendency of kerosene to produce an intense and offensive smoke when ignited and to deposit carbon thickly when all the conditions gov-



ATOMIZING HEAD AND MIXING CHAMBER SEPARATED

erning its vaporization by more ordinary methods are not exactly right, it is nothing short of amazing to see Porter's kerosene vapor burn in any condition in which it can be ignited, without smoke, smell or deposit. Of course, the vapor itself has an odor—which, however, is quite different from that

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raw kerosene—but the products of combustion appear to have none. In one of e motors employed for test work the nition system was in bad condition and e motor missed fire considerably. When is happened the white vapor came through e tail-pipe perfectly clean and without any lf-burned smell—in fact, the smell of lu-icating oil was plainly perceptible in the haust. When all cylinders were firing roperly the exhaust was absolutely clean nd would not soil a white handkerchief.

Porter does not attempt to explain why here should be no liberation of carbon, eing satisfied, at least for the present, with etting results, but, of course, attributes ne peculiarities of the vapor to the slight artial combustion in the carburetter, which pparently acts in some way to prevent the ormation of carbon upon combustion outide of the carburetter. Porter has found hat there never is trouble from deposits n the sylinders or on the spark plugs exept where the flame in the carburetter has een momentarily extinguished and raw erosene vapor has been drawn in.

Despite the somewhat startling expedient of using a flame in the device, there is no danger from its presence. The vapor at the point of combustion is too rich to burn rapidly, burning beyond the screen is impossible and a back-fire from the motor would have a tendency to extinguish the flame momentarily. Apparently there is no danger from the flame.

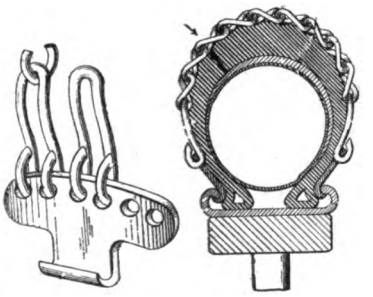
Most of the road test work with the Porter carburetter has been done with a large and heavy six-cylinder car, the manufacture of which has been discontinued, which is notoriously voracious in the matter of fuel consumption. The motor is rated at 60 horsepower. Running on gasolene, the best average that could be made was 5 miles to the gallon of fuel. On kerosene with the Porter carburetter the average rose to 10.5 miles per gallon, and the motor showed an appreciable increase in power, especially on hills. Under favorable conditions a speed of close to 60 miles was attained on kerosene, while the best that could be done on gasolene was less than 50 miles an hour.

Porter is frank to say that there still is room for improvement in the device. He aims to eliminate the spark, except at starting, and he expects to reduce it somewhat in size, though as it is it is no larger than a gasolene carburetter of equal capacity. There are details that require more careful attention in the way of adjustment than Porter likes, for it is his aim to make the carburetter very much less easily deranged than a gasolene carburetter. The means of doing these things have been found, however, and it now is merely a question of putting them into the most convenient and compact form.

REPAIRING BLOW-OUTS BY USE OF PATCH AND CHAIN

Los Angeles Invention which Will be Manufactured by Weed Company—Patch Stops Hole in Tire and Chain Holds Patch in Place.

When a man has a blow-out on the road he is in trouble, even if his trouble is nothing more than putting on a spare tire and tube, but if he has no spare tire or tube, then he is in real trouble, especially if he is out in the country or some distance from a garage where he can have his tire repaired or get a new one. Having this situation in mind, possibly having had it forcibly called to his attention, Timothy C. Dobbins, of Los Angeles, has invented a device calculated to afford an efficient tem-



DOBBINS'S CHAIN BLOW-OUT REPAIR

porary repair, and the device is now in process of being placed on the market by the Weed Chain Tire Grip Co. of New York.

The Weed company steered Dobbins through an interference proceedings in the United States patent office and will produce the device under a royalty arrangement. It is simple in its construction and one way in which Dobbins and the Weed company came to be acquainted may be through the fact that he employs a cross-chain arrangement of somewhat the same nature as the regular Weed cross-chain used for anti-skidding purposes.

The device consists of a couple of brackets which hook under the clincher rims at the sides and are connected by several cross-chains, lying close together and extending over the tire. When a blow-out occurs the procedure is to remove wholly or partially the tire and tube and place a large, stiff blow-out patch over the hole in the shoe on the inside; this is strong enough to withstand considerable pressure, but is not safe for any extended travel. The tube is placed in position with the hole in the tube covered by the patch, and tire and tube are replaced as before the accident occurred.

The brackets are then hooked under the edges of the rims, in such position that the mesh of chains comes across the hole in the shoe and acts as a reinforcement for the patch. When the tire is inflated the patch may tend to spring outward, but it cannot go far before its progress is halted by the mesh of chains and the air pressure is sufficient to make a sufficiently tight fit to permit the car to be driven several miles. It is not beyond the realm of reason to suppose that much more than "several miles" could be driven on occasion before the repair would fail of its purpose.

Forgot the Make of His Machine.

This is said to be a veracious yarn. Whether it is or not, it ought to be. A salesman for an automobile house got into casual conversation with a flashy young fellow in a smoking car, and in time the talk drifted around, more or less naturally, to automobiles. And when the Flashy Fellow confessed to owning a car the salesman pricked up his ears and asked what make it was.

"Gee! Now, let's see—darned if I can think of the name!" sputtered the chap. "I'd know it in a minute if I heard it, but it's gone clean out of my head."

Mr. Salesman smelt a rat and decided to go after it.

"Well," he said, "there's the Remington, Royal, Underwood, Blickensderfer, L. C. Smith——"

"That's it! That's it! It's an L. C. Smith!" interrupted the victim, eagerly. "Great machine, ain't it?"

"Yes," replied the salesman, slowly. "It's a fine machine. I don't know very much about such things, but I've heard that it is one of the best typewriters built," and he disappeared down the narrow passageway and never even glanced back at the stunned youth.

Putting Metal-to-Metal Joints Together.

In handling parts that are put together with metal-to-metal joints, or even with thin gaskets, the greatest care should be taken not to bruise the edges. It is rather surprising how easy it is to raise a small lump on a cast iron part, for instance, which will be sufficient to prevent a tight joint and will be the cause of more or less leakage until it is discovered and dressed down with a smooth file. Aluminum parts such as crankcases, gearcases and the like are of course even more easily marred, and should be handled with great care.

Why Clutches Require Gentle Treatment.

Despite much verbal and printed advice, and despite the existence of common sense in people who drive cars, an enormous amount of trouble is caused by the improper

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use of the clutch. It is thought by many to be less trouble to let the clutch in with a slam and brace up against the inevitable jerk that follows than to take a little care and effect a gradual engagement. The personal discomfort caused by the wrenching jar caused by this method of starting of the car is the smallest part of the evil that results. Every part of the driving mechanism is subjected to abnormal stresses, and if there is any tendency of any part to let go or to give trouble, rough work with the clutch will bring on that trouble long before it is normally due. Of course, sudden engagement of the clutch on an up grade is much worse than on the level, but it is bad enough anywhere.

The Salesman and the Gear Shift.

Electric gear shifts had been very prominent in public and private trade, and the man who walked into a certain salesroom supposed every salesman, at least, knew something about them.

"Got the new electric gearshift on this car?" he asked, pointing to a chassis on the salesroom floor.

"Sure! Want to see it work?" And the "salesman" walked over and threw in the electric starter.

When informed that that didn't seem to be what the visitor was seeking, the "salesman" confessed himself "stumped."

One Cause of Obstructed Pipes.

One of the possible, if rare, causes of gasolene line-pipe obstruction may arise from the fact that when fittings are screwed together very tightly small bits of metal often are stripped off the threads and in time work their way to the place where they can do the most harm. While it is difficult to guard wholly against this sort of thing, it is usually sufficient to round off the end of a threaded part that is being screwed into a fitting, so that there will be no opportunity for the thread to break.

Why Mufflers May Sometimes Whistle.

The rapid manufacturing methods that now are common are responsible for the fact that the holes drilled in mufflers sometimes are rough and ragged, with the result that the escaping gases set up a whistling noise that is anything but agreeable. Smoothing off the rough edges will usually eliminate the unwelcome sound.

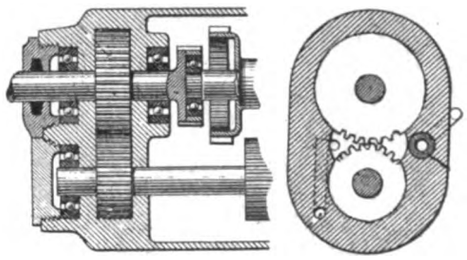
Hand Cranks that Need Lubrication.

Small thing though it is, it is surprising to notice the number of starting cranks that are squeaky either in their bearings or in their handles. Squeaks mean friction, and in the case of the handle it may mean friction against someone's skin—if that someone doesn't spill a little oil.

HERE'S A CLUTCH BRAKE HIDDEN IN THE GEARCASE

Clever Device on French Car Prevents Spinning of Clutch — Secondary Gear Shaft Driven by Oil Pump Gears.

Everyone who has driven a car knows that after a machine has run for a short time and the bearings have been well "run in" the clutch, and with it the clutch shaft and primary shaft of the gearset, will spin at quite a lively rate after the clutch has been disengaged and the gears placed in neutral preparatory to changing to a lower gear, and it is necessary either to wait until the parts have slowed down or else produce a racket that causes pedestrians to turn around and "rubber"—that is, if no clutch brake is fitted. The clutch brake is merely



HYDRAULIC CLUTCH BRAKE

a diminutive brake acting automatically to slow down the clutch under such circumstances, the usual device being some sort of a frictional arrangement.

A very clever little clutch brake, which differs widely from the more conventional type, is built into the gearcase of the Rochet-Schneider car and takes the form of a gear pump, as the accompanying illustration clearly shows. In this gearset the secondary shaft is permanently geared to the clutch shaft and therefore turns whenever the clutch shaft turns. The pinion and the gear are mounted upon the secondary shaft and the clutch shaft, respectively, and are enclosed in a close-fitting casing so arranged with intake and outlet chambers and ports that they act just as does an ordinary gear pump. The oil which is circulated, however, merely flows round and round in a closed circuit, the inlet passage, and its port being in communication with the opposite outlet passage and its port. The passages and ports are of such size that the oil normally flows freely, offering practically no resistance. In the outlet, however, is a valve which is connected through a lever with the clutch pedal.

When the clutch pedal is depressed to withdraw the clutch the valve is partly closed, so that considerable resistance is opposed to the flow of the liquid, and this resistance of course quickly absorbs the energy in the spinning clutch and shafts and slows them down. It is clear that any desired degree of resistance or braking effect can be obtained by the adjustment of the connection between the clutch pedal and the brake-pump; if a quick action is wanted the valve is set to close all but a very small opening, while a more gradual retardation can be had by adjusting for a less restricted valve opening. While the wear and the conseqent increase of leakage in such a device is slight, it can readily be compensated for by the same adjusting means, a more restricted valve opening making up for loss of pressure through leaks caused by wear.

Lorimer's Daughter Sues Elgin Promoters.

Sixteen prominent men, stockholders in the Elgin Road Race Association, are named as defendants in a suit for $50,000 filed in Elgin, Ill., by Mrs. Graham, daughter of former Senator William Lorimer, asking that amount for damages alleged to have been sustained when a portion of the grandstand collapsed at the 1910 race; the suit would have been outlawed had it not been filed before September 1. The reason for the delay is said to be an effort to secure settlement through the Pacific Surety Co., which carried all risks of the race and which is reported to have offered her $1,200 in settlement.

A similar action has been filed in Cook county against the Chicago Motor Club. The 16 men sued are: Fred W. Jencks, H. D. Hemmens, Theodore Schmitz, Wallace Willson, Philip Freiler, M. M. Cloudman, M. S. Aldridge, George Glos, Charles G. Heywood, F. M. Lasher, E. J. O'Beirne, W. J. Gilbert, A. M. Retan, D. B. Hoornbeek, Charles Kerber and W. H. Goetting.

Leverage of Long and Short Screwdrivers.

It is doubtful if the truth ever will overtake the ancient superstition that a greater leverage can be obtained with a long screwdriver than a short one. The pursuing truth is that the length has nothing to do with the turning leverage, but that a long screwdriver almost invariably has a handle of greater diameter than a short one, which, of course, accounts for the greater leverage. Put a large handle on a short screwdriver and a small handle on a long one, and the state of affairs would be reversed. If it was true that a long screwdriver gave more torque than a short one it would be in order to apply the principle by making the propeller shaft of a car as long as possible, and by this means bring about an "unearned" increase in the power of the drive!

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FALLACY OF TRYING TO IMITATE PERSONALITY

Reilly's Salesman Expresses His Belief in Each Man Retaining the Personal Assets With Which He Was Endowed—"Polish Off the Rough Edges and Don't Be a Monkey," Says Reilly.

Two little girls in blue blouses and white skirts tripped down the street, and they passed a girlish "How do you do, Mr. Reilly?" as they went by that dealer's salesroom, which Reilly was just entering, having come from a successful rolling of the



TWO LITTLE MAIDS PASSED A GIRLISH "HOW DO YOU DO? MR. REILLY"

little square bones in the cigar store nearby. This meant that, instead of Reilly paying double for his cigars, Mike the Cigar Man footed the bill, wherefore Reilly had a license to be unusually genial.

Reilly Calls Little Girl a "Monkey."

"Hello, girls! Long ways from home, aren't you?" he answered, and as they smilingly admitted that perhaps they were the dealer passed on into his salesroom, where his salesman was looking over a new car, fresh from the factory.

"Who are your lady friends?" queried the salesman.

"Oh, they live up my way."

"Cute kids, aren't they?"

"They sure are—especially the bigger one. But that other one—she's a regular little monkey."

"That's not a nice way to talk about a lady," remonstrated the salesman. "What do you mean—a little monkey?"

"You couldn't notice it very well by seeing them once, but you couldn't help noticing it if you saw much of them. The little one is always with the other one, and she mimics her in every way she can. It is only the girl way of doing things, I suppose, but sometimes it makes me weary to see her imitate the big one. Girls have always been that way, and I suppose they always will be; but they make me think of monkeys every time."

"Well," challenged the salesman, "why pick on the girls; they're all good friends of mine. How about the men? Didn't you ever see a man monkey?"

Salesman Says There Are Men "Monkeys."

"I suppose there are a few," admitted Reilly, as he swung the right rear door of the car open and shut to see if it fitted properly.

"A few!" exclaimed the salesman. "A few is good; the trade's full of them. 'trade monkeys,' and you find them in every trade, especially in the selling end."

"Then they're 'monkey salesmen,' or 'salesmen monkeys,'" suggested Reilly.

"Whatever they are makes little difference, but what does make the difference is that they don't realize the damage they are doing themselves by copy-catting after somebody in the hope that by being like him they will be as good and as efficient as he is."

"Well, isn't one thing that is just like another thing just as good as the other?" asked Reilly.

Copying Man Cannot Be Complete Work.

"Yes," agreed the salesman, "provided it's a complete copy; but the men who start out to copy other men can go only so far; they can copy mannerisms, and ways of speech, and style of dress, but when they come to imitate the real inside man—that which is responsible for the man's success—they fall short. They have copied a few exterior points, and that is all."

"How do you happen to know all this?" asked Reilly, as the two moved into the office.

"Did you ever happen to have heard it said that experience is one of the greatest and best teachers?" asked the salesman.

"I once heard a rumor to that effect."

"Well, that's where I learned it; I once thought imitating a successful man would assure me success," replied the salesman.

"And it didn't," added Reilly.

The Salesman's Attempt at Imitation.

"Quite right. It didn't," asserted the salesman. "I had an idea when I was new in the business than as good a way as any of making good was to do as the older men in the business did, so I picked out a model and started to copy him. In the doing I was squelching my own personality at a rapid rate and I didn't know it. And I wasn't getting on as fast as I had hoped I would, either."

"What did you copy?"

"Well, for one thing, this man's name was Griffin and he had a crisp and assertive way of speaking, and I thought that inasmuch as he was making good I could do the same thing, or help myself some, by getting so I could talk as he did. I naturally do

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not talk that way, but I made myself do it and it didn't seem to fit. Finally, one day the boss, who had given me my job, wanted to know what had become of the tone and manner of speaking that I brought with me when I came there to work. He said he had liked it because it did not have the terseness that characterized some men and still rang true and was convincing. I asked him if I had changed in that respect, and he said he believed I had.

The "Griffin" Suit That "Made Noise."

"I didn't extend any particular explanation, but I proceeded at once to discard the Griffin voice and get back to my own. I actually got along better, too, for it was myself and my old voice that nature had given me working together as it had been intended they should. Also, Griffin used to wear checked suits and tan shoes and was somewhat flashy in his dress, and I thought I ought to do the same thing, too. I got a suit that was as near like his as I could get without having it the same thing, but I never felt natural in it.

"I always liked something more subdued, a blue or a black, or something like that, and the first time I put on that Griffin suit I felt as if people could hear it a block. Maybe they couldn't—but I could. After I thought things over and cogitated on what the Old Man had said, I wondered if I wouldn't do just as well if I trimmed the rough edges off my own personality and used it instead of trying to discard it and acquire one like Griffin's. One of the first things I canned was that Griffin suit, and when I got back into clothes that I liked I actually felt better and did better work in the bargain.

Each Personality a Harmonious Whole.

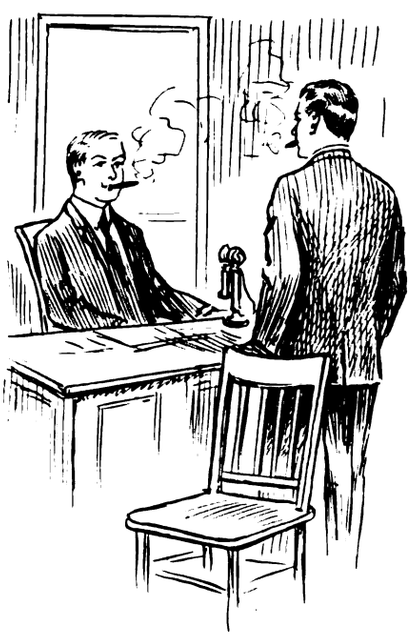
"Griffin was a trifle nervous and impetuous, and I tried to copy that, but without success. I never was so constituted, and it made a monkey of me right away; I felt foolish and I guess I acted foolish. The trouble with it all was that it didn't fit. I was made one way and Griffin another, and each of us was destined to get along fairly well the way we were made, and when I tried to fit some of those Griffin characteristics in with mine it was a poor combination."

"It's the same way with those two little girls," said Reilly. "The littler one would be just as cute as the other one and in her own way, but the cuteness she tries to copy is a flat failure."

"It's a case of subordinating personality," asserted the salesman. "No two people are exactly alike, although there are close comparisons now and then, and every man, I believe, can do the best work with his own personality. Griffin's crisp talk, impetousness and flashy clothes all went to make up a harmonious combination and no one noticed that there was anything wrong with any part of the whole; people who knew Griffin would have noticed it had he changed in any respect, and when anyone mentioned Griffin they immediately saw a picture of him as he was.

How Men Resemble Architecture.

"It's like architecture. One type or style is made up of harmonizing things, and it is the same with men. You put a Greek voice on a Louis the Can man and it doesn't fit. Neither does a Turkish pagoda suit hitch with an early Gothic walk."



"THEY HAVE COPIED EXTERIORS, AND THAT'S ALL," SAID THE SALESMAN

"Some architecture there!" commented Reilly.

"That's all right, I mean well anyway," added the salesman. "I may have got things a little mixed, but I don't believe you know the difference. If I started out to talk to a prospect and go at him hammer and tongs, as some salesmen can do, it would make a fool of me. I can't do it and I ought not to do it; I was cut out to do things in a different way and I can do my best in that way.

Many Things Worthy of Imitation.

"I don't mean that there is nothing worth copying, for there are many things about a man that are well worth imitating. If another dealer finds that you are holding a big trade through your service proposition, it certainly is up to him to imitate you; and not only should he imitate you, but if he is any kind of a dealer he should go you one better. If I find that another salesman is selling a certain style of car by catering to the women of the prospects' families it is a good move for me to do the same thing—only go him one better. Copying efficiency-making qualities is all right and is very helpful.

"Copying methods is legitimate and a worthy course of procedure, but copying mere exterior mannerisms of individuals is useless and all wrong. The whole business world of to-day has been brought to its present efficiency through copying and improving upon the business methods of others; this form of imitation makes progress, for the man who is copied and improved upon is obliged to go his competitor one better."

Smooth Off One's Rough Edges.

"Yes," supplemented Reilly, "and in the same way a man can enter into competition with himself. He can make his personality valuable to himself by smoothing off the rough edges and by improving upon it but without spoiling it. A man doesn't have to wait until he finds someone to imitate before he can do little things, such as deciding that he would look just as well if he kept his clothes pressed and didn't let his face look like a wilderness through lack of a shave.

"Any man with intelligence and self-respect should be able to do those things without any assistance and he ought to be capable of reasoning out without much difficulty that it doesn't look very gingery for him to lop around and lean on something every time he gets a chance. He need only give a little thought to himself and he will speedily discover various little things that might be remedied—that is, provided he can take an impartial look at himself.

Reilly Cites a Need of Improvement.

"Young Bergoman, down the 'row,' sits in his salesroom office with his feet on the desk and never takes them down until a prospect or a customer gets nearly to him. That's a part of the personality, I suppose; he's not the punchy, gingery type that some men are, and I wouldn't wonder but that he has a streak of laziness in him, but there isn't anything about him that prevents him acting like a gentleman and a business man. He wouldn't be subordinating his personality if he kept his feet off the desk and went out on the floor to meet his customers; he would merely be rounding off the rough edges."

"But supposing a man isn't able to polish off his rough edges unassisted; what's he going to do?" asked the salesman.

"Did you notice this polish?" asked Reilly, as he smoothed down his dome, where No. 9 and No. 13 had become crossed in a very annoying manner.

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NEW YORK REORGANIZES ITS TAXICAB BUSINESS

Regulations Under New Ordinance Specify Certain Features of Construction and Make Plain Defects That Will Bar Cabs From Service—Raise Standards of Cabs and Drivers and Lower Rates.

New York City has revised its entire code of regulations governing the use and operation of taxicabs and all other vehicles which ply for public hire.

Rates have been lowered, protection has been furnished the public against exhorbitant charges, strict supervision has been established over the whole hack business, and the new ordinance, which went into effect August 1, not only sweeps away the hack stand privilege through which hundreds of thousands of dollars of a polite "graft" was paid to hotels, clubs and others by the taxicab companies, but it has more direct reference to both the construction and maintenance of cabs than is generally supposed.

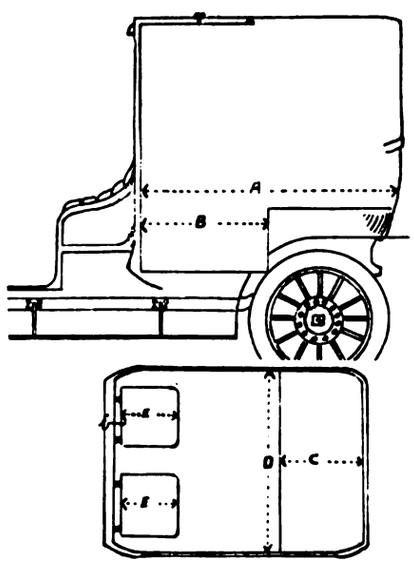
During the past week the Mayor's Bureau of Licenses has been very busy straightening out the kinks in the situation, licensing chauffeurs anew, examining vehicles and taximeters, educating the cabmen in the new regulations and establishing the cab stands.

Standard of Taxicabs to Be Raised.

The primary object of the examination of vehicles is to raise the standard and ensure a neat, clean, comfortable and safe means of transportation for the public, and for this purpose the examiners have had printed a codification of the defects and faults which will cause a taxicab to be ordered out of service until it has been altered to conform to the official specifications. Some of these are defects of upkeep; others are due to factory construction, and not a few of the taxicab men have been surprised to learn that so many things could be the matter with a cab. It is not unlikely that some taxicab manufacturers, too, will be obliged to make alterations in their blue-prints.

It may be possible that there are cab makers who, in constructing their brakes and steering connections do not arrange to lock or pin the nuts which secure these parts, but the regulations provide that such must be the case. Also, exhaust pipes must extend beyond the rear end of the cab body and doors must be of a type which can be unlocked from the inside.

Another little constructional wrinkle which will be required after February 1, 1914, the date when new licenses must be taken out each year, is a little sliding shutter in the glass behind the drivers' head through which passengers may communicate with the chauffeur. Also, after the expiration of the present licenses no taxicab which seats four passengers inside shall have outside more than the single seat for the driver, this seat to be designed for one person only. And when a taximeter is affixed at the factory it must be placed on



HOW NEW YORK DEFINES TAXICAB SPECIFICATIONS

the side of the cab opposite the driver's seat.

There are, however, more important specifications to be regarded in building taxicabs. The city has specified certain body measurements which, unless they are observed, compel the cab to be listed as a "little taxicab," in which case it can carry and charge for but two passengers. They apply to the inside of the tonneau or rear seat compartment, are in the nature of a minimum measurement and are as follows: Front to back (A), 45 inches; front to riser of rear seat (B), 26 inches; depth of rear seat (C), 19 inches; width at front of rear seat (D), 41 inches; depth of auxiliary seat (E), 12 inches.

Must Provide for Carrying Baggage.

Provision must be made for a reasonable amount of baggage and some sort of a receptacle must be provided for the carrying of a rate card. Sightseeing cars must have the backs of the seats enclosed so that the occupant of a seat is not in danger of having his pockets picked by a "dip" in the seat behind him.

The regulations as to defects and faults upon which a cab may be rejected are:

Defective Axles—1. Bent axles (front or rear), dead axles (front or rear), or steering knuckles so worn or bent as to cause the front wheels to show a tread of more than three inches wider than the standard design of the vehicles. 2. Front wheels showing more than one inch out of line. 3 Rear axle shaft-drive wheels that run more than 1½ inches out of the true at any point.

Defective Steering Gear—1. Lost motion of more than one-quarter steering wheel turn with road wheels rigidly fastened. 2 Post insecurely fastened to chassis. 3. Loose ball joints on rods and arms.

How Broken Frames Bust Be Repaired.

Defective Frame—1. Broken side frames which have not been repaired with outside or inside steel plate of a cross section equal to or greater than that of the frame at the point of fracture, or which have not been welded, or which have not been trussed with steel rod of at least one-half inch diameter. 2. Sagged and bent frames. 3. Distorted side frames showing a sag or bend at any point of more than one-quarter inch per linear foot.

Defective Springs—1. Broken springs having more than one leaf in six broken at center point of axle. 2 Broken springs having any one of the top three leaves broken. 3. Springs so flattened as to give less than four-inch drop to frame with no load in vehicle. 4. Springs not tightly bolted to axles.

Defective Flooring—1. Any flooring not notched, fitted, screwed, bolted, buttoned or fastened in such a way as to preclude possibility of jarring loose. 2. Flooring with holes, not necessitated by construction, of more than nine inches area. 3. Floor boards less than three-quarters of an inch thick and supported at points further than 30 inches apart.

Defective Guards and Steps—1. Loose or missing mud guards, running boards or chain guards. 2. Mud guards that prevent full opening of doors or allow clothing to touch wheels or mechanism of car when

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entering. 3 Chain guards that do not completely protect passengers' clothing on entering or leaving vehicle.

Defective Gas Line — 1. Gasolene pipes not soldered or screwed in place at every point. 2. Gasolene pipes and systems that leak at any point.

Defective Brakes — 1. Braking systems that do not have at least one set of brakes which will lock the wheels of the vehicle against the inertia of the car at any possible speed on dry, smooth pavement. 2. The maintenance of the brakes in perfect order of a motor hack is of the utmost importance, and this will at all times be insisted upon; and they will at all times be subject to inspection. 3. All brakes and steering connections secured with bolts must have such bolts fitted with nuts, the same to be locked or pinned. 4. These parts shall be subject to inspection at any and all times.

Specifications That Cover Engines.

Defective Power Plants—1. Engines that cannot be run without smoking. 2. Cars not equipped with muffler or silencer. 3. Exhaust pipes shall extend beyond rear end of cab body.

Defective Doors—1. Doors that will not shut securely so as to remain closed unless unlatched by hand. 2. Doors that cannot be unlatched from the interior of the vehicle. 3. All vehicles must be properly upholstered, painted and varnished.

Defective Tops and Glazing —1. Tops shall be of good quality and weather-proof material. 2. Bows shall be in good condition. 3. Joints between tops and main body on landaulet cars shall be tight and waterproof.

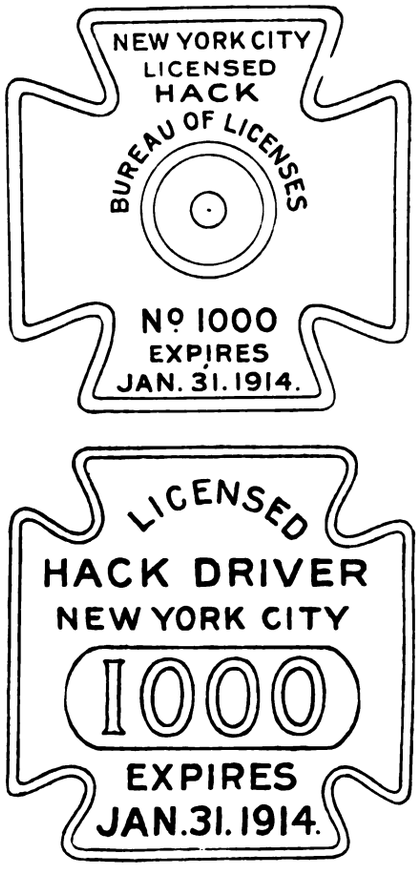
Glass.—1. Glass in both windows and doors must be clear and free from air bubbles, cracks or fractures. 2. Glass shall be set in frames of approved quality and shall be so arranged and fitted as to be noiseless. 3. No glass will be accepted that is so arranged as to obscure the view of the passenger. 4. Windows shall be so arranged as to be easily adjusted by passengers for ventilation. 5. On and after February 1st, 1914, no license will be issued for any motor propelled hack, unless provided with a small sliding shutter in the glass behind the driver's head.

Horse Cabs, Too, Have a Standard.

Horse-Drawn Vehicles — 1. All horse-drawn vehicles shall conform to the same standard as that required of motor vehicles, and a license will not be issued to any horse-drawn vehicle when horse, or horses, or harness does not come up to such reasonable standard of fitness as may be prescribed by the Chief of the Bureau of Licenses, or his duly appointed representatives. 2. Any hack drawn by one horse shall be a licensed cab.

Sightseeing Cars—1. The back of seats on sightseeing cars must be closed to prevent, as far as possible, the pockets of the passengers being picked. 2. The rates of fare under which such sightseeing cars operate must be permanently displayed.

Motor Hacks—Touring cars must seat at least four persons in the tonneau. Front



NEW YORK'S APPROVED CAB LABEL AND BADGE FOR ACCEPTED DRIVER

or drop seats must be adjusted so as to be easily raised and lowered by passengers. Provision must be made for a reasonable amount of baggage.

The regulations also provide that oil cans, waste, etc., shall not be carried on the footboard and that no advertisements or notices shall appear on the outside of the car except such as pertain to the owner. A robe must be provided between November 1 and April 1 of each year. No driver shall refuse to carry any reasonable amount of baggage, and when cabs are lined up at a stand the drivers of the first two in line shall be with the cabs and ready for a fare. Also, no driver, unless previously engaged, shall refuse to carry an applicant, although a prospective passenger may choose any car in the line.

When a car leaves the head of the line the rest must move up one position, and no cab may solicit passengers in front of any theater or other building by driving back and forth unless he drives two blocks past each time. Hotel men and others may, however, request the city to establish a stand for a certain kind of cabs in front of their place of business, "gas," horse or electric, but granting it is optional with the city.

Signs Tell How Many Cabs to a Stand.

The cab stands are designated by signs placed on the sidewalks at various places, specifying how many and what kinds of cabs may stand there. A sample reads, "Public Cab Stand, for 3 taxicabs on 110th street and 1 taxicab on Lenox avenue," and another, "1 taxicab and 1 horse cab on Broadway, 8 taxicabs on 49th street." The signs thus far employed are a metal sheet on an iron rod standard, but when the matter of wiping out the "graft" stands has been adjudicated, if favorably to the city, a more ornamental type will be employed.

In the case of horse cabs and others on which taximeters are not affixed, a mile shall be 20 blocks north and south in the numbered streets, as from 120th to 140th, and seven blocks east and west on numbered and lettered avenues, as from 1st to 7th avenue. Each driver will carry receipt blanks and must give a receipt when asked, thus affording a remedy in case of intentional or unintentional overcharging.

The terms applied to various vehicles plying for public hire have been determined as follows: Hack, any vehicle; cab, a two-passenger hack; coach, for four or more passengers; sightseeing car, a vehicle to carry seven or more for sightseeing purposes; taxicab, a coach driven by mechanical power and having a taximeter; "little taxicab," a mechanically propelled cab with a taximeter.

Undesirable Drivers Being Eliminated.

Stringent regulations are eliminating the undesirable class of chauffeurs, and the new group will be well informed as to the city if the examination they are being given is any criterion. A license will not be granted to an applicant unless he can read and write the English language, and is clean in dress and person; unless he is a citizen of the United States or has declared his intention to become a citizen; if he is under 21 years of age; if he is not strong enough to deal with the baggage of passengers; if he is deemed unfit from any infirmity of body or mind; if he unable to produce testimonials of good conduct from his last employer; if he is unable to produce at the office of the Bureau of Licenses two reputable citizens who will give sworn testimony as to his good conduct, as to how long they have known him, etc.; if he is addicted to the use of intoxicating liquors;

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he is unable to answer satisfactorily questions as to his knowledge of the provisions the ordinance governing public hacks, the lice traffic regulations, the location of the veral railroad stations, steamboat piers, spitals, places of amusement, public ildings, etc.; if he is unable to produce o recent photographs of himself.

Cabs which are licensed have sealed upon ie right side of the dash over the hood a etal license tag and each driver, too, is iven a tag. The cab license number and ie new rates are contained on a card hich is fastened inside the cab where it an be seen by the passengers. If the taxieter has not been adjusted to conform to ie new rates the passenger is instructed ow to find the correct charge. The card ays:

"This taximeter is adjusted to register - cents for the first — mile or any part hereof, and 10 cents for each additional — nile. This is higher than the legal rate. o find correct fare, calculate mileage by he fare on this meter and pay according to he legal rates printed below. The number f this taxicab is ——.

"Legal rates: Single tariff for one or two passengers—30 cents for the first half mile or any fraction thereof; 10 cents for each additional quarter mile; 10 cents for each our minutes of waiting time; 20 cents extra or each trunk. No charge for hand baggage.

"Double tariff for three or more passengers—40 cents for the first half mile or any fraction thereof; 10 cents for each additional one-sixth mile; 10 cents for each four minutes of waiting time; 20 cents for each trunk. No charge for hand bagagge."

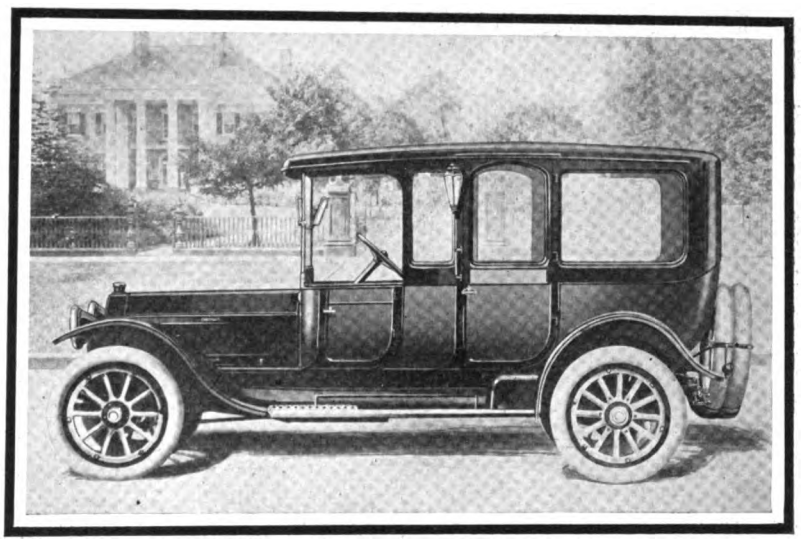
Simplifying Inches and Millimeters.

One of the results of the use of the metric system of measurements has been to confuse those who are not familiar with the divisions as compared with the inch standard, and to such the direct-reading millimeters-inches conversion scales that have been brought out by the Ward Leonard Electric Co., of Bronxville, N.Y., should be most convenient. The scales are six inches long, of flexible celluloid. On one side is the scale of inches, in the usual way, and against it the millimeter scale, so that any measurement within the capacity of the scale can be followed and read directly in millimeters. On the other side the millimeter scale adjoins the edge with the scale in inches back of it. Thus a measurement can be taken either in inches or millimeters and the conversion made instantly and directly. The fact that the device is designed for advertising purposes detracts not one whit either from the cleverness of its conception or its genuine utility as a means of making conversions.

ENCLOSED CAR COMFORTS EXEMPLIFIED IN PEERLESS

Maximum Area of Glass and Minimum of Framework Give Unrestricted View—Interior Details Last Word in Refinement.

It is a difficult matter to make even a guess at what may be done by automobile manufacturers in the future to increase the luxuriousness of enclosed cars, so thoroughly are the possibilities of making improvements being investigated; but it is by no means hard to perceive a concrete improvement when it is built into a car, and for this reason the limousines, berlines and other enclosed bodies the Peerless Motor Car Co. is mounting on its three six-cylinder chassis of the latest series—38, 48 and 60 horsepower, respectively—are not a little conspicuous.



PEERLESS LIMOUSINE THAT IS PRACTICALLY GLASS-WALLED

The most striking feature, as the accompanying illustration makes plain, is the wide area of plate glass employed—in fact, there is so much glass that the view in all directions is practically unobstructed; the rear wall is provided with a window that is as liberal in its dimensions as those in the sides, and thus the chauffeur is enabled to look back and see clearly the road behind him without "taking observations" with the aid of a mirror. A considerable area of clear glass has been gained by eliminating framing and employing heavy plates of glass sliding in grooves. Side and partition windows are raised and lowered by means of straps, while the windows in the doors are moved by a patented handle device which, when turned, moves the glass and holds it in any position by means of automatic clutches.

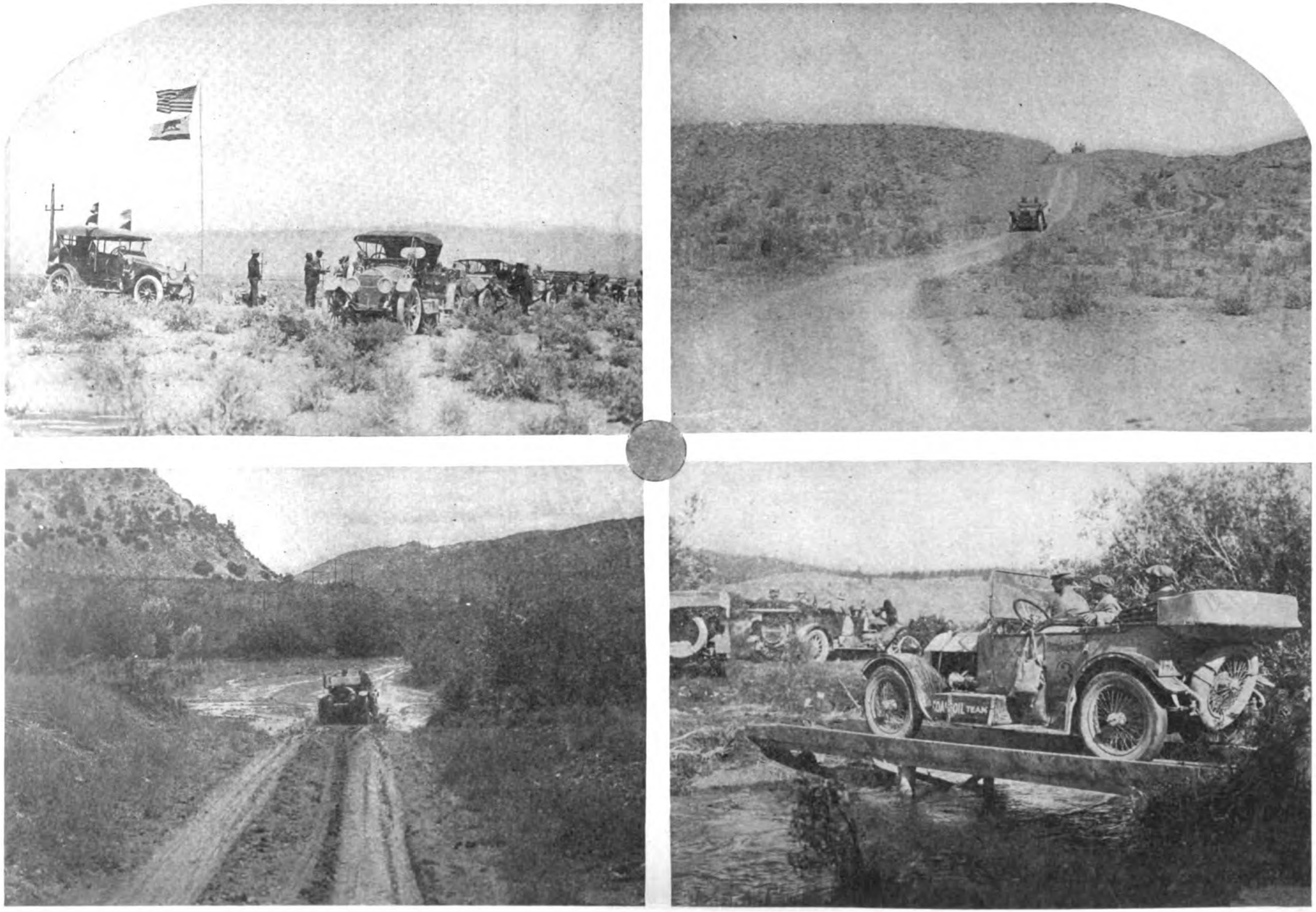
The doors are so designed that they open practically flat against the body, which, however, they cannot touch. The full opening of the door is available. Electric steplights are automatically switched on by the opening of doors, illuminating the steps for entering or leaving passengers. The interior lights are of the pullman car type—that is, when not in use each lamp is concealed by a silver plate which, when a button is pressed, swings around and brings the lamp into position, at the same time switching on the current. Pressing another button causes the lamp to disappear and go out. The lamps are neatly and unobtrusively built into the corners.

The auxiliary seats, of a new type, controlled by the Peerless people, fold, when not in use, into the partition wall and are entirely out of the way. The backs of these seats are adjustable for height, so that either tall or short passengers can be made comfortable. The regular seats are improved in detail to such an extent that they are said to be even more easy than the seats of the older Peerless cars—which is highly complimentary to the new seats. Communication with the driver is through an electric telephone embodying the microphone principle, which reproduces spoken instructions more clearly than they can be transmitted by means of the usual speaking tube.

According to despatches from Pittsburgh, the American Petroleum Society has been organized in that city for the purpose of "studying the science of petroleum technology." One of the principal objects of the society, it is added, "will be to lower the cost of gasolene."

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HOW THE COUNTRY LOOKED NEAR THE END OF THE "MADE IN INDIANA" TOURISTS' WESTWARD JAUNT OF 3,740 MILES



UPPER LEFT—AT THE NEVADA-CALIFORNIA STATE LINE. UPPER RIGHT—WHERE THE LINCOLN HIGHWAY TRAVERSES THE GOLD COUNTRY, NEAR TONOPAH. LOWER LEFT—SAND AND WATER COMBINE TO MAKE HARD GOING. LOWER RIGHT—TWO TRACKS ARE ENOUGH FOR AN AUTOMOBILE BRIDGE

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INDIANA "BOOSTERS" REACH END OF WESTWARD JOURNEY

Day Late in Los Angeles, but All Finish in Good Shape — Californians Extend Enthusiastic Welcome to Hoosiers.

It's all over but the shouting, and even the official shouting is over, but to keep an Indiana "booster" from shouting on any and all occasions is a yet unaccomplished task; but the tour of the "Indiana made" tourists from their State to the Pacific Coast has officially terminated, the party having rolled into its destination, Los Angeles, last Sunday, 3rd inst.



WHERE MOUNTAINS RISE IN GRANDEUR

All the way they "boosted" Indiana, and all the way they talked for the Lincoln highway, that great thoroughfare which they helped to blaze and which is in fair prospect of being a real automobile road some day. Former Mayor Bookwalter of Indianapolis made speeches without number and Carl G. Fischer of Prest-O-Lite and Speedway fame made even a few more than that, and everybody talked Indiana until some of the natives who are not familiar with their geographies picture the Middle West as a big section labeled "Indiana" with a few no-account patches of land around the edges.

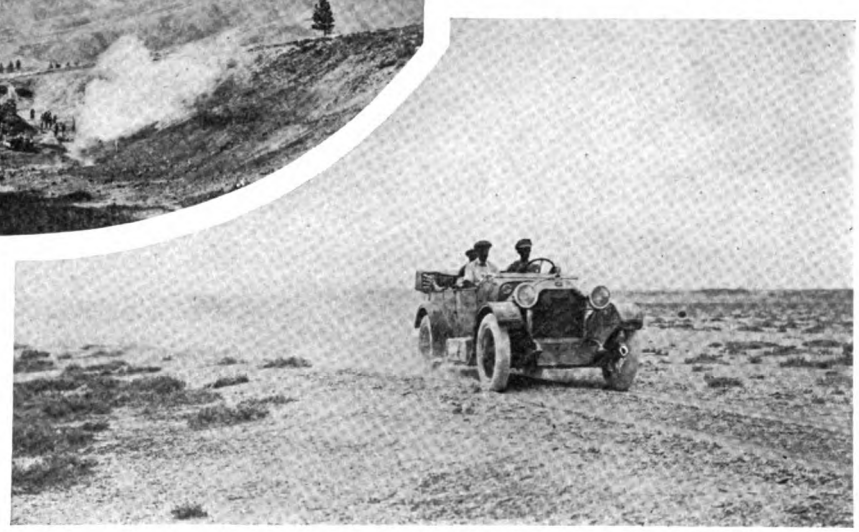
San Francisco gave the tourists a royal welcome and, in fact, all the California towns did the same; of course, some of them have not so many people as has San Francisco, but they made noise in proportion. The trip through California, from the time the Nevada line was passed, was the bright spot in the tour, for the roads were better; but even with better roads the tourists were disappointed in what California had to offer in the way of highways and those Golden Staters who had been so wildly enthusiastic about California "boulevards" were voted into the Ananias Club without a dissenting vote.

The party arrived in San Francisco Monday, July 28, as stated in Motor World last week, and spent several days rambling around the Golden Gate and taking in the sights of the metropolis of the Pacific Coast. But even if they did have a good time, they couldn't stay forever, so they pulled up stakes and set out for Los Angeles, the last lap of the run, Thursday morning, and the cars made easy time down through the Santa Clara valley to Del Monte. Summertime is flower time in California, and many of the party were treated to sights they had never seen before. Although it was but 150 miles, the tourists took from 8 o'clock in the morning until 5 o'clock in the afternoon to make the trip. And everywhere was the enthusiastic California greeting.

Thursday night, 31st, was spent at Del Monte, and the next morning the cars were rolled away toward old Monterey, a few miles distant, where historic scenes abound. Turning southward again, the Indianans passed through the Salinas valley and over the Santa Margarita mountains, traversing innumerable small towns en route. Just before noon the old San Miguel mission was passed and the midday stop was made at the Hot Springs hotel, a noted resort.

At times the route from San Francisco south lay along the beach, and on one occasion the tourists found the tide encroaching upon the highway they had picked out, but just to demonstrate that folks from Indiana are somebody, they drove with their wheels in the wash of the sea. Someone said they stopped the tide, but that sounds like an Indiana story. After 150 miles of this pleasant travel, the cars arrived in San Luis Obispo at 4 o'clock in the afternoon, and the night of the 1st inst. was spent in this little old community.

Kodaks were set clicking the next morning on the southward journey when the cars went up the steep grade of San Marcos pass, which, while no slight ascent, was negotiated without difficulty because of the excellent highway; only 119 miles were made that day, and the travelers rested when they reached Santa Barbara at the end of a roadway which led beneath luxurious magnolias, some of them 90 feet high.



DESOLATION—AND THERE WERE MILES AND MILES OF IT

On the morning of the 3rd inst., last Sunday, the final stretch of the trip was begun. The tourists seemed to feel the approach of a demonstration, and long before they arrived in that city they were aware that they would get a welcome; it really started when Los Angeles dealers representing each of the makes of Indiana cars met the party at Santa Barbara to make the 105-mile run to the final goal, and outside Los Angeles there were cars and more cars. Someone said there were 1,000. Maybe there were; no one had time to count them. A run down to Long Beach to the ocean was planned to complete the trip.

(Continued on page 32.)

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ELECTRICITY AND ACETYLENE FINANCIALLY CONSIDERED

Ward Leonard Engineer Takes up Cudgels for Electricity—Gives Figures for Generator, Battery and Motor Operation.

To the Editor of Motor World:

I was very much surprised to see on page 29 of your issue of July 24th, an article headed "Counting the Cost of Lighting by Electricity."

The first part of this article is evidently supposed to be written by some one in the employ of the Motor World Publishing Co. and has the authority of that company. The balance quotes from an article written by an employe of a concern whose interest is in discounting the great advantages gained by electric lighting of motor cars.

Of course, no one ever thought he could produce power by means of a dynamo without putting power into it, but I cannot understand just why your part of the article should assume that the power produced by the average dynamo is 35 amperes and 7 volts, with 50 per cent. efficiency, when the average dynamo actually gives from 8 to 10 amperes at 7½ volts.

An actual test on a stock dynamo of one of the large concerns with a constant current output of 10 amperes into a battery, shows that at all normal engine speeds the power necessary to drive the dynamo averages about .21 horsepower.

Your figures show a power necessary to drive the dynamo of over three times that which these tests show.

Now, in regard to some of the statements made by Mr. Combs. Mr. Combs says: "The result of these tests shows that from 5 per cent. to 12 per cent. of the fuel fed into the engine of an electrically lighted car is consumed by the electrical apparatus."

Let us analyze Mr. Combs's figures. If a car were driven some 6,000 miles in the course of a year at an average of 16.5 miles per gallon, as in case two, the gasolene cost (at 18 cents per gallon) will be $65.52 for the year. Now, if 7.8 per cent. of the amount of gasolene used is used by the electric dynamo, as per Mr. Combs's figures, this will mean a total gasolene cost for light of $5.11, which is undoubtedly decidedly less than the cost of lighting a car by means of gas and oil during that period.

Another statement that is rather interesting is: "The discharge rate for two average headlights and one tail light is between 9 and 11 amperes."

Motor World shows deplorable lack of knowledge in publishing such a statement.

The average headlight has a 16 candlepower bulb and takes less than 3 amperes. The average rear light has a 2 candlepower bulb and takes less than ½ ampere.

The average pair of 16 candlepower headlights and 2 candlepower tail light will take about 6 amperes, and even if the customer uses 21 candlepower headlights (the largest used in ordinary practice), he would not get anywhere near the 9 amperes discharge rate mentioned.

Mr. Combs further states: "The dynamo must generate close to 14 amperes if the battery is to be charged at all, for the owner who does most of his driving by night and little by day."

This statement is just as incorrect as the former ones, and a charging rate of 10 amperes is ample for any owner who has 21 candlepower headlights and 2 candlepower or 4 candlepower rear light, and drives all the time at night.

The statement that "Some of the cars of the Indiana-Pacific Tour have had to burn their lights a few hours each day in the day time to keep from overcharging the battery" is incorrect, and if any drivers did it they did it through ignorance.

Another statement is: "Storage batteries used for both starting and lighting are having an average life of less than one year. Batteries used for lighting alone are having an average life of considerably less than two years."

My experience in the electric lighting and starting field has been rather extensive and dates back to the beginning of this development. Practically all batteries that have been on cars with lighting systems under my observation in the last three or four years are still in use without giving any trouble whatsoever. Batteries in use for over a year are universally giving perfect satisfaction, with no signs of when their useful life will cease.

I note the statement in regard to instruction books I take pleasure in enclosing herewith pages 18 and 19 of a circular which gives you all the instructions which one of the largest companies finds necessary for the care of the system.

I am interested in the statement: "It must be remembered that when a motor car maker adds 200 pounds of electrical equipment," etc., because this is another exaggeration similar in its type to those already mentioned.

One system such as is used by cars having an engine the size of some of those mentioned in Mr. Combs in his article will weigh a total of about 130 pounds or less, including the weight of the wires, cables, switches, dynamo, motor, battery, gears, etc. Subtract from this the weight of the usual storage ignition battery, which weighs between 30 and 40 pounds, and the weight of the type B Prest-O-Lite tank, which weighs some 25 pounds, plus the weight of the heavier lamps necessary if gas and oil are used, and you will find that the motor car maker is adding to the weight of his car very little indeed.

I trust you will give this letter the same prominence that you have given the statements by Mr. Combs.

LEONARD KEBLER.
President Ward Leonard Elec. Co.

[The first part of the article referred to in the foregoing letter was intended solely to explain the method of calculating the power absorbed by a dynamo. The figures were assumed arbitrarily for the purpose of illustration only and were not stated to represent the output of the average dynamo and were not intended to do so.—Ed.]

INDIANA "BOOSTERS" REACH END OF WESTWARD JOURNEY

(Continued from page 31.)

The Los Angeles reception was truly enthusiastic, but was clouded by the fact that the local dealers' association used the occasion to boost a suburban real estate addition which had just been opened.

The list of cars was made up of two Americans, two Marions, one Premier, two Hendersons, two Haynes, one Pathfinder, one McFarlan, two Appersons, one Empire, one Pilot, one Marmon, one Premier truck and one Brown truck—18 in all.

The cars claim a clean score; the Brown truck, which had been overloaded with baggage and supplies and which became stranded in the Rockies, cut across from Big Pine after entering California, and, omitting San Francisco from its schedule, caught up with the party near Los Angeles, so that every car that started was on hand at the finish. That is, with the exception of A. L. Westgard's Premier, which he drove north to Portland, Ore.

As to schedule, the cars were a day late, due to a bit of over-scheduling in the rough Nevada country. They started from Indianapolis July 1 and, while they should have reached Los Angeles August 2, they arrived the following day, taking 34 days.

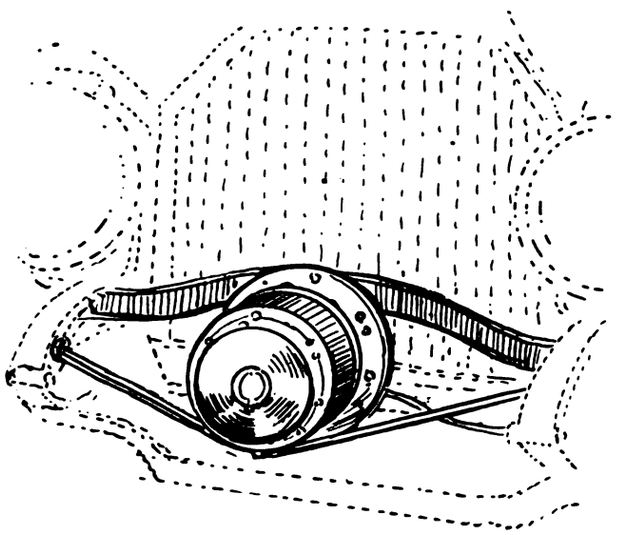
As to distance, several registered 3,740 miles, but Ray Harroun did so much demonstrating with the kerosene carburetter on his Henderson that he traveled 4,015. This he made on 258 gallons of kerosene, costing $31.68, and 6 gallons of oil, costing $2.40, wherefore he figures his cost per mile at ¾ cent and his average fuel consumption at 15½ miles to the gallon. A car of about the same size and weight as the Henderson but using gasolene averaged 14 miles to the gallon and its fuel and 38 gallons of oil cost $110—about three times what Harroun spent.

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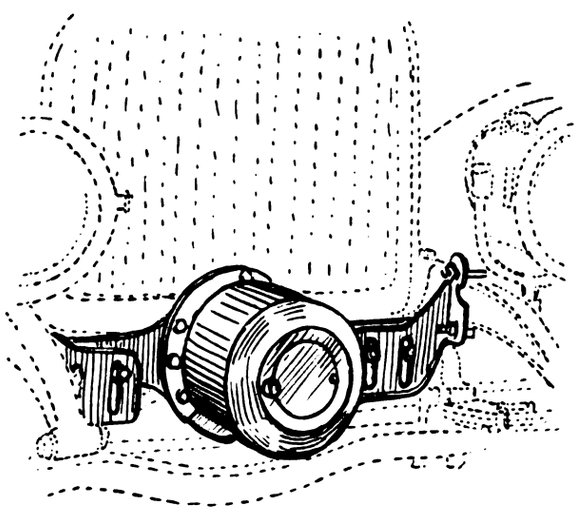
MOTOR STARTING ENERGY COILED UP IN SPRINGS

Construction and Operation of Four Types of Mechanical Starters That Rely on Spring Tension—Ease of Installation, Light Weight and Simplicity That Mark Them—Rewinding by Motor Power and Momentum.

In the field of the true mechanical engine starter, which differs in several respects from the pneumatic apparatus which has been illustrated and described in the last two issues of Motor World, it is doubtful if there is anything simpler—barring pedal and lever operated devices, of course, which form a separate division of engine starters—than the spring-operated mechanism which is completely enclosed and self-contained and may be attached almost by any one of average intelligence; it is a single unit.



EVER READY SPRING STARTER INSTALLED



VOLKMAR CRANKING DEVICE IN SERVICE

In its particular sphere, this type of starter has a number of features that recommend it and that should go far toward increasing its popularity. In the first place it is very light; probably it is lighter than any other form of starter with the exception of the various forms of manually or pedal-operated apparatus. In the second place, it is exceptionally simple to attach and it can be applied to any make of car regardless of model or age or power; it is fully automatic, never requires attention once it has been properly installed and it performs its work with the minimum of exertion on the part of the operator.

Obviously, the statement to the effect that such devices never require attention after they have been installed, requires slight modification, for no piece of machinery, regardless of class, will operate indefinitely and prove efficient if it is let too severely alone. Where metal moves against metal, lubrication always is needed if friction is to be (practically) eliminated and wear reduced to the point where it is negligible. Hence, any of these devices will require a couple of squirts of oil now and then, though in applying it care should be taken to follow the instructions of the manufacturer; generally, each manufacturer supplies with his apparatus an instruction book telling what to do and what not to do, and if these instructions are followed implicitly it may be expected, without fear of disappointment, that the apparatus will prove quite satisfactory — provided it is not abused.

Winding Up the Big Springs.

But to get back to the starters themselves: Spring operated devices are of two kinds, and almost without exception both kinds employ long steel springs coiled concentrically with the engine crankshaft. In one kind, the spring is rewound after it has performed its function of starting the motor, by the motor itself; in the other kind, the spring is rewound not by the motor but by the car, or rather the momentum of the car, and this distinction forms an important difference between the two types. In the former type, the engine must be started by the spring before the spring can be rewound for the next start—unless a hand winding crank is used, of course—whereas in the second type the spring can be rewound without using a hand crank, simply by rolling the car along the road, or by permitting it to coast down a slight declivity.

Among starters of the first kind, the Ever Ready, which is produced by the American Ever Ready Co., of New York City, probably is as well known as any for its installation on a great number of cars, and its successful use for a number of years has made it a fairly familiar sight on the highways and byways. In appearance, it looks for all the world like an inverted headlamp; and it is just about the proper size to complete the illusion. For the average four-cylinder motor of say, 4⅜ inches bore or less, the polished brass casing measures just 8½ inches in diameter and 10 inches in length from back to front; for larger motors the casing is one inch longer and for smaller ones it is 1½ inches shorter, the diameter remaining the same in any case. The neat appearance of the starter as it looks applied to a car is shown by the accompanying phantom sketch.

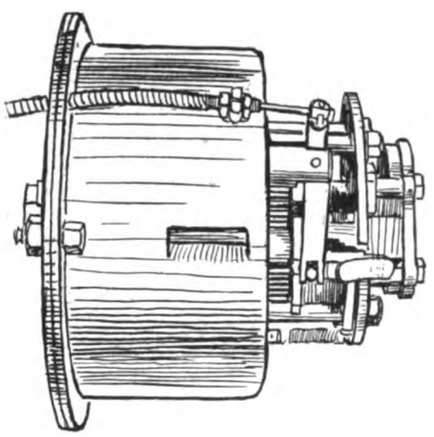
The entire mechanism of the device is contained within the brass housing; there is nothing outside this case except the pedal which releases the coiled up energy that starts the motor. In the partly sectional drawing of the starter that is reproduced herewith, the various parts are quite clearly shown. The principle element, of course, is the spring, or rather the springs, for there are two of them; they are designated

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E and they are powerful enough, by the way, to give the motor anywhere from six to eight complete revolutions at a rate of about 300 revolutions a minute. Hence the starter may be expected to provoke responsive kicks from a motor even if the start is made on magneto ignition.

Spring Releasing Mechanisms.

When these two powerful springs are released by depression of the pedal provided for the purpose, they kick the crankshaft around because their tension is greater than the compression of the motor; this is the theory upon which all spring starters operate. Then when the engine has started and the pedal is released, the springs automatically are rewound for the next start. To make this operation easy, the rewinding is done through a train of gears, designated B in the accompanying sketch. When the springs are fully rewound, which requires just 26 revolutions of the motor and therefore is done in a few seconds, the winding mechanism automatically is released and the brake band F clamps down tight, holding the springs for the next start.

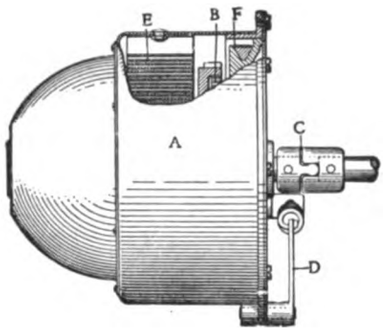


VOLKMAR SPRING STARTER

What to Do When Motor Balks.

If the engine should fail to start under the persuasion of the springs, which is unlikely because of the speed at which the crankshaft is rotated, the springs can be quite easily rewound by hand with a small crank that is provided for the purpose. Similarly, if the starter is damaged by collision, or by anything else, the motor can be cranked by hand, and this feature is further desirable because it permits the crankshaft to be rotated slowly by hand for grinding in valves, for instance, or for timing them. In the picture, the release lever is designated D; A is the external casing and C is the universal coupling between the starter and the engine.

The Volkmar, which is produced by the Volkmar Auto Starter Co., of New York City, is another somewhat like the Ever Ready; it spins the srankshaft around just as it would be spun by hand, which is the way automobile motors are supposed to be started. Like the Ever Ready, the Volkmar relies upon the energy represented by two coiled up springs contained in a brass casing that is mounted in front of the radiator and attached to the forward extension of the crankshaft nominally occupied by the hand crank. These springs are two inches wide and no less than 12 feet long and when they uncoil their power is sufficient to crank the engine from six to twelve revolutions, depending upon the size of the motor and its condition. A small dash pedal serves to release the springs, and once their work is finished they are rewound automatically for the next start.



EVER READY DETAILS

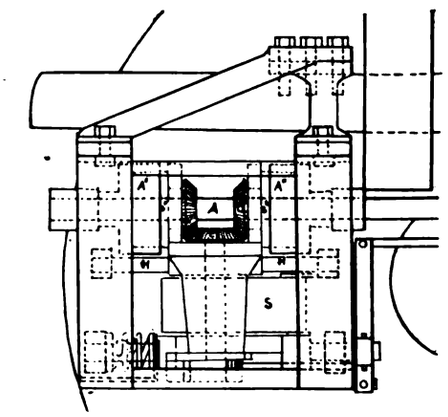
How Internal Details Differ.

The internal economy of the Volkmar starter, however, is quite a little bit different from that of the Ever Ready, as the accompanying drawing shows. Instead of being held by a brake band clutch, the springs are held in readiness by a positive dog clutch which performs two functions. This clutch is keyed to the starter shaft in such a way that it is free to move along the shaft under the control of the spring releasing pedal. When the starter is at rest with the springs wound, the center shaft and the clutch rotate freely with every movement of the engine. As soon, however, as the spring tripping pedal is depressed, the sliding clutch moves back and gears on its back face engage gears on the face of the spring arbor, thus making the spring, arbor and clutch to all intents and purposes a solid piece. The same movement of the clutch releases the springs, thus cranking the engine.

After the engine has started and the operator's foot is removed from the pedal, which returns to its normal position under the action of a small spring, the sliding clutch is moved along its shaft, disengaging the gear in mesh with the spring arbor and engaging gears on its other end with the rewinding pinion. The two starting springs then are rewound through a train of gears by the engine, and when they are rewound to the proper tension a simple Geneva gear automatically disengages the engine from the rewinding pinion. The engine then continues to run and no parts of the starter except the central shaft remains in motion. For motors up to 30 horsepower, the Volkmar starter weighs complete 35 pounds, and for larger motors—up to 60 horsepower—the weight is 45 pounds.

Bigger and Heavier Construction.

The Tudor starter, which is produced by John W. Tudor, of Boston, Mass., is entirely different from either of the two devices already described, although it belongs in the same general class with them; which is to say, the coiled spring is rewound after it has started the motor by the motor itself. The general layout of the mechanism, which is rather larger and heavier than either of the other two, is shown by the accompanying sectional views; the device complete weighs about 75 pounds and it is powerful enough to crank a heavy motor three revolutions at high speed without rewinding the spring.



TUDOR BEVEL GEAR DRIVE

Starting Drive Through Bevel Gears.

The spring in the Tudor starter is not mounted concentrically with the engine crankshaft, as it is in every other spring starter; instead, it is carried on a short shaft at right angles to the crankshaft extension, to which it is geared as shown. On the crankshaft extension there are two bevel gears facing each other and the shaft that carries the spring is geared to both of them. These two gear wheels, however, are free to rotate on the crankshaft extension shaft under normal conditions. When the engine is to be cranked, the controlling pedal is depressed and this operation serves to clutch one of the crankshaft extension gears to the shaft and at the same time to release the spring which cranks the motor through the gearing. When the pedal is released, the first gear automatically declutches from the shaft and the other is

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utched, thus turning the shaft carrying ie spring in the opposite direction and re-inding the spring for the next start; the pring is held in its coiled position by an rdinary ratchet and pawl mechanism which s not shown in the picture. With this de-ice, as with the others, a hand crank for se in emergencies is supplied and can be ttached in the good old-fashioned way vhen necessary.

The Warner Gear Company's starter, which is made under Gardner patents by he Warner Gear Co., of Muncie, Ind., is he only spring engine starting device on he market in which the spring is rewound by the momentum of the car; hence it is still different from any of the others and rightfully belongs in the second class of starters of the kind.

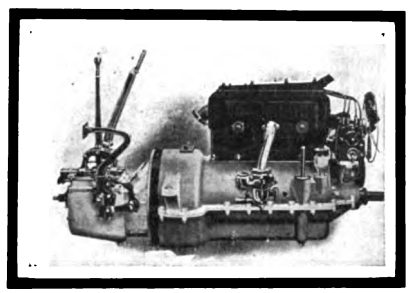
Winding Up by Momentum.

Two views of the Warner mechanical starter are shown herewith, and both of them have been reproduced from actual photographs; in the first of them there is shown a complete unit power plant to which the starter has been attached. In the picture, the black spacing ring shows the space actually taken up by the starter and also makes plain just where it is applied. The second picture shows an end view of the same engine after the gearset and clutch have been removed, showing the heavy spring coiled and ready for action as it is applied within the unit housing.

In its simplest aspect the Warner starter is nothing more or less than a connecting link between the engine and the gearset. To make the apparatus clear, it may be likened to a propeller shaft brake drum that contains a heavy coiled spring acting as the connection between the drum and the propeller shaft; when a brake band is clamped around the drum, the drum remains stationary and the spring winds up around the propeller shaft, and when it is fully wound the band will slip on the drum. If the motor is stopped the band will hold the drum and the spring until released, when the spring will unwind and in doing so will crank the motor.

In actual practice, the Warner starter consists of a special steel spring of tremendous strength, 42 feet in length and three inches wide. This spring is securely coiled within a large drum which forms the inside driving spider of the large face multiple disk clutch. One end is hooked securely around the main drive member, as shown in the accompanying picture—this hook, by the way, is an important feature, for it prevents the spring unwinding more than half its length—and the other end is attached to the outer edge of the drum.

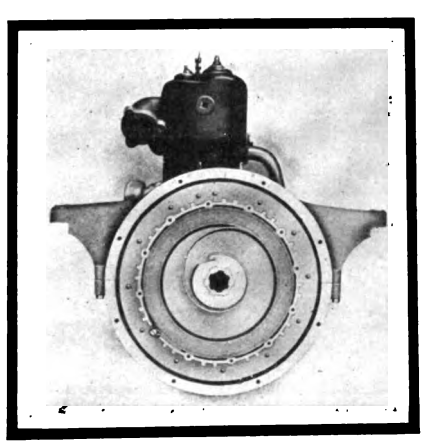
The operation of releasing the spring is controlled by the regular clutch pedal, which is mounted so that it can be moved to engage either one of two small levers; its movement, however, is controlled by the gear shift lever and it is impossible to release the starting spring unless the gears are in neutral. A slight depression of the clutch pedal, after it has been moved to



WARNER STARTER APPLIED

engage one of the small sub-levers, releases the spring and starts the motor. The spring is calculated to "spin" the average four-cylinder motor 16 times at a rate of speed equal to from 900 to 1,000 revolutions a minute. Further depression of the clutch pedal, after the car has been started and has gathered speed, applies the service brake, which is virtually the casing to which the outer end of the spring is attached, and in this way the spring is rewound, not by the engine but by the momentum of the car transmitted through the propeller shaft.

Obviously, if the operator should neglect to apply the service brake after the motor



WARNER INTERNAL ECONOMY

had been started, the first time he applied it to bring the car to a halt, the spring would be wound automatically and ready for the next start. Due to the tremendous power represented by the momentum of the car, the rewinding operation is exceptionally quick; it is pointed out by the manufacturers that it requires less time to rewind the spring than it does to unwind it in starting the motor. The actual weight of the starter complete is but 40 pounds.

As obvious as it must be to those who are thoroughly familiar with motors and motor cars, it evidently is not so obvious to others, that the operation of any engine starter, regardless of how it operates—the system on which is operates—is quite as much dependent upon the condition of the motor as it is upon the starter; otherwise they would not put themselves in the class with the novice who attempted to start his motor with the gasolene turned off and then wondered why he got no results! It should be plain that if any kind of a starter is to be expected to start the motor then the motor must be capable of being started. In other words, the throttle must be opened the proper amount and the spark advanced the correct degree and the ignition current switched on. Unless all these things are done it certainly will be necessary to wield the hand crank, if not to start the motor, then to wind up the spring.

In this respect the electric starter or the pneumatic starter has a little the advantage of the spring device, for if the motor does not start promptly with the former the trouble can be remedied and the crankshaft given another whirl merely by pressing a button. But just as the operator learns that he must set spark and throttle and ignition to start by hand or by electricity, so will he learn to set them to start with a spring—even if he has to learn by experience and that experience means one or two muscular encounters with the starting crank.

Proper Method of Cleaning Upholstery.

The well-known cleansing properties of gasolene make the temptation to employ it for cleaning the leather of the upholstering a strong one; but gasolene has the unfortunate effect of dissolving the enamel on the leather, so that the finish is removed along with the dirt. According to one who knows, nothing is better than white castile soap and warm water as the best cleansing agents for leather of the kind used for automobile seats, and the washing and drying should be followed by a rubbing with a soft cloth sprinkled with a few drops of olive oil, the last vestige of which should be removed with a dry, soft sloth.

Owing to a misunderstanding of terms, the description in last week's Motor World of the latest series of Stearns-Knight cars made it appear that the spark and throttle levers have been placed under the steering wheel, whereas it is the switch, carburetter, lighting and horn controls that are in the neat casing on the column under the wheel. The gearset of the four-cylinder model, which formerly was mounted on the rear axle, now is mounted with the motor, forming a unit power plant.

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1,047,538. Spring Tire for Automobiles or Other Vehicles Gottleib A. Krautter and William M. Krautter, Marion, Ohio. Filed July 21, 1911. Serial No. 639,863. (Tire formed of spring-supported sections.) 3 claims.

1,047,548. Casolene Gage for Automobiles. Chas. E. Miller, Reading, Pa., assignor of one-third to Jos. M. Keenan and one-third to Edward H. Filbert, Reading, Pa. Filed July 20, 1912. Serial No. 710,538. (Glass gauge resembling water gauge of a boiler.) 4 claims.

1,047,573. Apparatus for Electrical Ignition Systems. Max Schafer and Robert Wagner, Stuttgart, Germany, assignors to The Firm of Robert Bosch, Stuttgart, Germany. Filed April 9, 1912. Serial No. 689,579. (Terminal arrangement for high-tension distributer.) 5 claims.

1,047,594. Expansible Core for Repairing Tires. Elno H. Trump, Akron, Ohio, assignor of one-half to John K. Williams, Akron, Ohio. Filed Sept. 18, 1911. Serial No. 649,929. (Repair core expanded by forcing wedging members into filling of small balls or the like.) 5 claims.

1,047,595. Speed-Regulating Carburetter. John F. Twigg, San Francisco, Cal. Filed Nov. 8, 1909. (Fuel valve controlled by speed of ingoing gas.) 18 claims.

1,047,611. Gradometer. Frank A. Bradley, Washington, Mo. Filed Feb. 7, 1912. Serial No. 675,978. (Quadrant with indicator actuated by pendulum.)

1,047,620. Pneumatic Wheel. James M. Dennis and Russell R. Dennis, Cambridge City, Ind., assignors, by direct and mesne assignments, to International Pneumatic Wheel Co., a corporation of Indiana. Filed Nov. 23, 1911. Serial No. 661,877. (Wheel with plunger-and-cylinder spoke arrangement, and compressed air chamber in hub.) 6 claims.

1,047,621. Pneumatic Wheel. James M. Dennis and Russell R. Dennis, Cambridge City, Ind. Filed Jan. 15, 1912. Serial No. 671,265. (Wheel with plunger-and-cylinder spoke arrangement, and compressed air chamber in hub.) 4 claims.

1,047,642. Vehicle Wheel. Adolph Jaeger, Jackson, Mo. Filed Oct. 28, 1910. Serial No. 589,522. (Wheel with plungers cushioned against air-bag in hub.) 5 claims.

1,047,650. Frame for Automobiles. George Hill Jones, Aldan, Pa. Filed April 25, 1910. Serial No. 557,311. (Frame with integrally formed radiator frame.) 5 claims.

1,047,660. Casing for Vehicle Springs. Louis F. Kuhn, Cananea, Mexico. Filed April 17, 1912. Serial No. 691,328. (Housing to enclose spring joints.) 4 claims.

1,047,705. Resliient Wheel. Harry L. Rice, Chilhowee, Mo. Filed Oct. 23, 1911. Serial No. 656,246. (Wheel with curved spring spokes.) 3 claims.

1,047,741. Spring Wheel. Frederic W. Brown, New Orleans, La., assignor of one-fourth to Anthony Ten Eyck Brown, Atlanta, Ga., and three-twentieths to Lydia M. Brown, New Orleans, La. Filed Feb. 8, 1921. Serial No. 676,267. (Wheel with two sets of small semi-elliptic springs, linked together, between inner and outer rims.) 10 claims.

1,047,803. Inner Tube for Automobile Wheels. Daniel W. Harris, Platte City, Mo. Filed April 3, 1912. Serial No. 688,252. (Spiral inner tube of spring metal.) 1 claim.

1,047,817. Windshield. Frank Knight, New Haven, Conn. Filed Dec. 12, 1911. Serial No. 665,230. (Windshield adjustable for both height and inclination.) 3 claims.

1,047,839. Revolving Cylinder Internal Combustion Engine. Charles Benjamin Redrup, Canton, Cardiff, England. Filed June 15, 1911. Serial No. 633,337. (Revolving cylinder engine with staggered cylinders.) 8 claims.

1,047,860. Internal Combustion Engine. Willard Irving Twombly, New York, N. Y., assignor to Twombly Motors Co., New York, N. Y., a corporation of New York. Filed Aug. 15, 1910. Serial No. 577,178. (Valve system in which exhaust valve stem works through intake valve and stem.) 8 claims.

1,047,886. Driving Mechanism for Automobiles. Carl M. Clark, Philadelphia, Pa., assignor to Simon Friedberger, Philadelphia, Pa. Filed May 4, 1912. Serial No. 695,132. (Electric motor with direct shaft drive to rear axle.) 4 claims.

1,047,888. Resilient Vehicle Wheel. Joseph Gaynor, New York, N. Y., assignor to Standard Resilient Wheel Co., Inc., New York, N. Y., a corporatio n. Filed Aug. 10, 1912. Serial No. 714.340. (Wheel with helical springs and jointed spokes.) 7 claims.

1,047,963. Timing Device for Ignition Systems. Charles T. Mason, Sumter, S. C. Filed Oct. 4, 1911. Serial No. 652,706. (Adjustable gear drive and mounting for magneto.) 7 claims.

1,048,020. Rotary Valve for Internal Combustion Engines. Harvey Oliver Witwer, New Hamburg, Ontario, Canada. Filed April 29, 1911. Serial No. 624,019. (Hollow plug valve with pressure counterbalance.) 3 claims.

1,048,021. Distributer for Automobile Engine-Starters. Charles A. Wulf, Indianapolis, Ind. Filed Dec. 16, 1911. Serial No. 666,224. (Distributer for ignition starters.) 2 claims.

1,048,054. Resilient Wheel-Rim. John Edman, Minneapolis, Minn., assignor to Alfred M. Hoyland, Minneapolis, Minn. Filed Nov. 2, 1908. Serial No. 460,634. (Tire with inner tube between rim flanges of wheel, and outer tread.) 1 claim.

1,048,055. Spring Wheel. Estle Archie Finzer, Hicksville, Ohio. Filed Nov. 1, 1911. Serial No. 657,916. (Wheel with pneumatic cylinder cushions.) 4 claims.

1,048,095. Explosive Engine. Ralph Ragan, Atlanta, Ga. Filed July 24, 1911. Serial No. 640,267. (Double-acting motor with separate pumping cylinders.) 4 claims.

1,048,106. Automobile-Top Slide. Alice E. Smith, Elyria, Ohio. Filed Sept. 9, 1910. Serial No. 581,226. (Slide-rails for front bow supports of top.) 2 claims.

1,048,162. Starting Ignition for Internal Combustion Engines. Gottleib Honold, Stuttgart, Germany, and Max Rall, Paris, France, assignors to The Firm of Robert Bosch, Stuttgart, Germany. Filed Oct. 20, 1910. Serial No. 588,137. (Sparking system for ignition starters.) 8 claims.

1,048,208. Device for Repairing Pneumatic Tires. Gustaf H. Raflovich, Boston, Mass. Filed Feb. 29, 1912. Serial No. 680,603. (Expanding core for tire repair work.) 2 claims.

1,048,211. Automobile-Lock. Herman J. Richner and Edward H. Richner, Cleveland, Ohio. Filed Feb. 19, 1912. Serial No. 678,705. (Locking device acting on flywheel.) 9 claims.

1,048,213. Front Driving and Steering Mechanism for Motor Vehicles. Merrick W. Sappington and Edward S. Hornbeck, Winchester, Ill. Filed Dce. 14, 1911. Serial No. 665,707. (Driving and steering hub with ball-and-socket joint.) 1 claim.

1,048,235. Friction Speed-Gear for Automobiles. Walter E. Trufant, Whitman, Mass. Filed Feb. 23, 1906. Serial No. 302,330. (Friction transmission with automatic pressure regulation.) 4 claims.

1,048,237. Pressure-Gauge. Charles R. Twitchell, Los Angeles, Cal., assignor, by mesne assignments, to A. Schrader's Sons, Inc., New York, N. Y., a corporation of New York. Filed April 26, 1911. Serial No. 623,452. (Tire pressure gauge of automatic "pencil" type.) 3 claims.

1,048,257. Transmission-Gearing. Roland T. Wright, Meltonville, Iowa. Filed Dec. 15, 1911. Serial No. 665,904. (Individual clutch change-speed system.) 2 claims.

1,048,258. Igniting Attachment for Lamps. John H. Young, Pelham, N. Y. Filed Sept. 4, 1912. Serial No. 718,451. (Gas lamp igniter with mechanical sparker.) 4 claims.

1,048,299. Pneumatic Clutch. James T. Dickson, Los Angeles, Cal. Filed July 18, 1911. Serial No. 639,196. (Clutch in which two disks are pressed apart by air pressure.) 4 claims.

1,048,308. Rotary Gas Engine. George E. Hanley, Oakland, Cal. Filed March 3, 1911. Serial No. 611,994. (Rotating cylinder engine.) 2 claims.

1,048,311. Exhaust Motor. Carl F. High, Madison, Wis. Filed June 26, 1912. Serial No. 706,029. (Exhaust-operated turbine on crankshaft.) 5 claims.

1,048,336. Vehicle-Spring. George E. Neuberth, Newark, N. J. Filed Oct. 10, 1910. Serial No. 586,236. (Auxiliary spring of the leaf type.) 2 claims.

1,048,362. Starting Internal-Combustion Engines. Fredereick Richard Simms, Willesden Lane, England, assignor to Simms Magneto Co., Inc., New York, N. Y. Filed Dec. 10, 1910. Serial No. 596,638. (Ignition starter.) 7 claims.

1,048,371. Pneumatic Cushion-Spring for Wheeled Vehicles. Joseph William Sutton, Brisbane, Queensland, Australia, assignor to Mary Sutton, Brisbane, Australia. Filed Aug. 26, 1911. Serial No. 646,208. (Pneumatic cushion within metal casing.) 2 claims.

1,048,376. Anti-Skidding Device. Rudolph John Thiesen and Campbell Thomas King, Jr., Atlanta, Ga. Filed Dec. 23, 1911. Serial No. 667,516. (Nonskid bars swinging laterally on hinges.) 2 claims.

1,048,406. Friction Driving Mechanism for Motor Vehicles. James M. Gilstrap, Delano, Cal. Filed Aug. 2, 1912. Serial No. 712,893. (Friction drive mechanism with shifting shaft.) 3 claims.

1,048,423. Puncture-Proof Tire. William McKay, New York, N. Y., assignor of one-twentieth to Irwin G. Burton, New York, N. Y. Filed May 16, 1911, Serial No. 627,475. Renewed May 24, 1912. Serial No. 699,538. (Pneumatic tire with separators between inner tube and shoe.) 5 claims.

1,048,464. Gearing for Traction-Engines. John T. Metcalfe and Garfield Metcalfe, Quincy, Pa. Filed Oct. 6, 1911. Serial No. 653,280. (Gearing for driving either wheel independently of the other.) 8 claims.

1,048,466. Horn. William Sparks, Jackson, Mich. Filed May 9, 1912. Serial No. 696,216. (Motor-driven diaphragm horn.) 3 claims.

1,048,467. Windshield. George L. Wilson, New York, N. Y., assignor to Martin L. Williams, South Bend, Ind. Filed Feb. 29, 1908. Serial No. 418,493 (Folding windshield with locking device.

1,048,482. Internal-Combustion Engine. William O. Barnes, Philadelphia, Pa. Filed Jan. 11, 1907. Serial No. 351,849. (High-compression motor with means for regulating compression.) 15 claims.

1,048,485. Crankpin Connection. Edward C. Bennett, Wormleysburg, and Charles J. Hilliard, Harrisburg, Pa. Filed April 29, 1911. Serial No. 624,225. (Connection for opposed motor rods to a single crank.) 1 claim.

1,048,503. Speedometer-Recorder. Arthur W. Dennis, Jacksonville, Fla. Filed April 1, 1912. Serial No. 687,749. (Automatic printing device for recording speedometer.) 8 claims.

1,048,510. Spring Suspension for Vehicles. Wm. E. Eastman, Boston, Mass. Filed June 8, 1912. Serial No. 702,420. (Spring system with spiral springs and connecting levers and links.) 4 claims.

1,048,518. Priming Device for Carburetters. Julius L. Fritz, Philadelphia, Pa. Filed Feb. 15, 1912. Serial No. 677,812. (Automatic primer operated by low suction.) 16 claims.

1,048,530. Automobile Radiator-Lamp. Don W. Harlow, Cleveland, Ohio. Filed Feb. 5, 1912. Serial No. 675,509. (Lamp holders built into radiator casing.) 6 claims.

1,048,557. Conveyance and Signaling Appliance Therefor. Ray H. Manson, Elyria, Ohio, assignor to The Dean Electric Co., Elyria, Ohio, a corporation of Ohio. Original application filed April 24, 1911, Serial No. 622,858. Divided and this application filed Sept. 18, 1911. Serial No. 649,964. (Electric horn button and wire connections.) 2 claims.

1,048,610. Internal Combustion Engine. William Wallace, Milton, Mass. Filed Dec. 9, 1911. Serial No. 664,816. (Overhead valve gear for V-motors and means for cutting out cylinders on either side.) 7 claims.

1,048,620. Carburetter. Eugene B. Williams, Stockton, Cal. Filed May 8, 1912. Serial No. 695,854. (Bi-fuel carburetter with single mixing chamber and two float chambers.) 3 claims.

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World's Stock Champion. Fastest Stock Mile

National

World's Fastest 500 Miles in Competition

One question in a million brains

All over this country there are men asking the same question *you* are asking yourself. In the stone front city salesroom; in the small town garage; in the offices and factories, serious-minded, thinking men are asking; "What is to be the future of the motor car business?"

Stronger and stronger glares the spot light of truth on the situation. More and more the public sees and realizes the truth. The answer to the question is found today in the public confidence. The dealer who can not see what the public sees; the dealer who fails to hear what the public says, will get a sad answer in the future. The same applies to the manufacturer. Opinions may differ in details, but the fact remains that the manufacturer who has proven his honesty, sincerity, and his here-to-stayness is the one who is being elevated to the highest level of public confidence today.

The methods of manufacturers and their selling policies decide their measure of true worth—or lack of it.

The dealer deals himself a poor deal, if he deals with any builder but the one who is here-to-stay.

The future of the motor car business is *good*.

Good for what?

Good for the good builder and good dealer.

You simply can't be a good dealer for a bad builder. Your hard work and cleverness can not outweigh the faults of the builder. Why spend your money and your labor to try and make good for a bad builder?

More cars than ever before will be bought this coming season. The educated public will buy them. You can't fool them. You only fool yourself in trying to do that.

The public wants its money's worth; it wants to buy where it has confidence in the car builder, the car's reputation and the prestige and rating of the manufacturer.

A car can rise no higher than its source, its factory.

A dealer can rise no higher than his car.

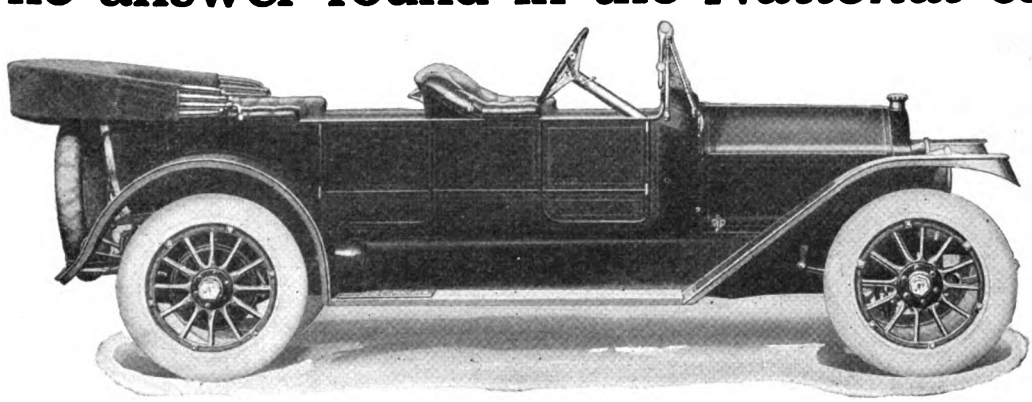
Catalog specifications, the paint on the hood, and salesman's speeches are futile if the car is lacking or the builders are not absolutely responsible and firm.

It is inevitable that the reputable builder with square methods of dealing with customers and who produces the greatest value in his cars, is the one who will have the confidence of the public. The *National* wins business and customers for you.

We repeat: For a car of quality, power in abundance, speed in emergencies, dependability, reliable and always efficient service, perfect control, convenience and comfort, there is no better car built than the *National*.

This is a matter of record, in tests and actual demonstrations of all kinds. This is guaranteed by a thirteen-year-old company with unimpeachable rating and good will. The *National* company is stable; it is here to stay because it is right in its methods of giving the public the one service that counts—*quality*.

The answer found in the *National* car



Five models, $2750 to $3400

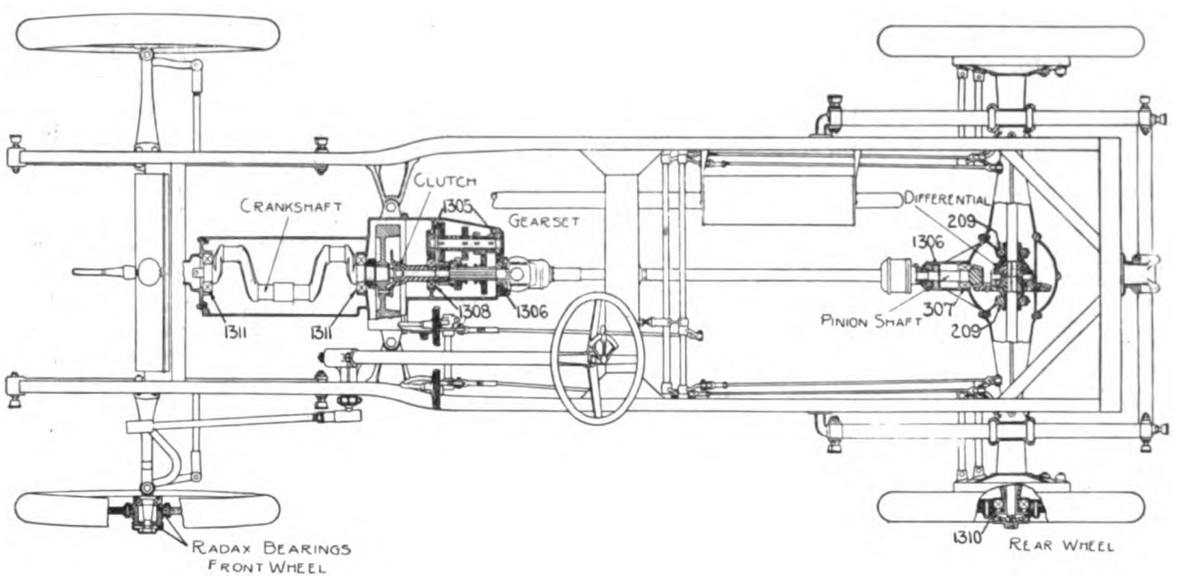
National Motor Vehicle Co., Dept. 90, Indianapolis, Ind.

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American Made For American Trade

New Departure

Ball Bearings Throughout, and Why



By the use of New Departure ball bearings throughout the entire chassis, the manufacturer of this car has reduced power losses, repairing and operating costs to a minimum.

New Departure ball bearings eliminate friction. Friction is expensive, wears away the parts, hastens depreciation, and makes frequent repair necessary.

By eliminating friction New Departure ball bearings waste so little of the motor energy that maximum driving power is transmitted to the rear wheels. By eliminating friction there is practically no wearing away of the parts. The life of the entire car is longer and repairs are fewer.

All of these advantages are secured without sacrificing bearing efficiency. New Departure ball bearings will carry the load under all conditions of service equally as well as any bearing made.

Have you seen our interesting brochure on "Friction Elimination"? If not, drop us a card today and it will be forwarded to you by return mail.

The New Departure Mfg. Co., Bristol, Conn.

Western Branch: 1016-17 Ford Building, Detroit, Mich.

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A Continued Story— No. 1

Look for No. 2 Next Week

Well, you've got to hand it to me for being the wise guy this time

Before making my choice of a buzz cart, I looked up the dope on the new-fangled Starters and there's nothing to it.

It's the good old reliable hand crank for mine—always on the job, ready for business. What if it is oily and muddy and I do have to get out in the mud and slush, a gink that runs a machine don't care for good togs anyway.

Sure, she starts hard sometimes, but exercise is good for me, cooped up in the office all day, and I want a Starter I can depend on.

That agent looked like a good fellow and showed he knew his business when he stood up for the hand crank. It has delivered the goods for years and it's only a question of time when the chaps with the new ideas will be glad to come back to it again.

GLBA

Storage Battery

Write us for full information

Willard Storage Battery Company, Cleveland, Ohio

New York Branch—136 West 52nd Street
San Francisco Branch—243 Monadnock Bldg.
Chicago Branch—2241 Michigan Avenue
Detroit Branch—1191 Woodward Avenue
Indianapolis Branch—438 and 439 Indiana Pythian Bldg.

Depots in All Principal Cities in the United States, Canada and Mexico

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Elyria-Dean
TRADE MARK



Rexo qualities have made it the most universal standard equipment electric horn. Designed primarily for large car manufacturers its popular price and good note have drawn public approval.

The **Rexo** gives a single tone warning and is instantly responsive to a pressure of its control button. Like all Elyria-Dean Warning Signals, the **Rexo** leaps into action, producing its warning signal simultaneously with the driver's needs.

So well made are Elyria-Dean Warning Signals that no oiling is required and the only adjustment (required perhaps once a year to take up wear) can be made in a few moments with a screw-driver.

Rexo Horns retail for $8 and are guaranteed as to workmanship, materials and breakage the same as the Tuto Horns.

Get the Elyria-Dean dealer's proposition. Our line will cover every warning signal need of your customers.

Elyria-Dean Products Manufactured Only By

THE DEAN ELECTRIC COMPANY

501 Olive Street, Elyria, Ohio, U. S. A.

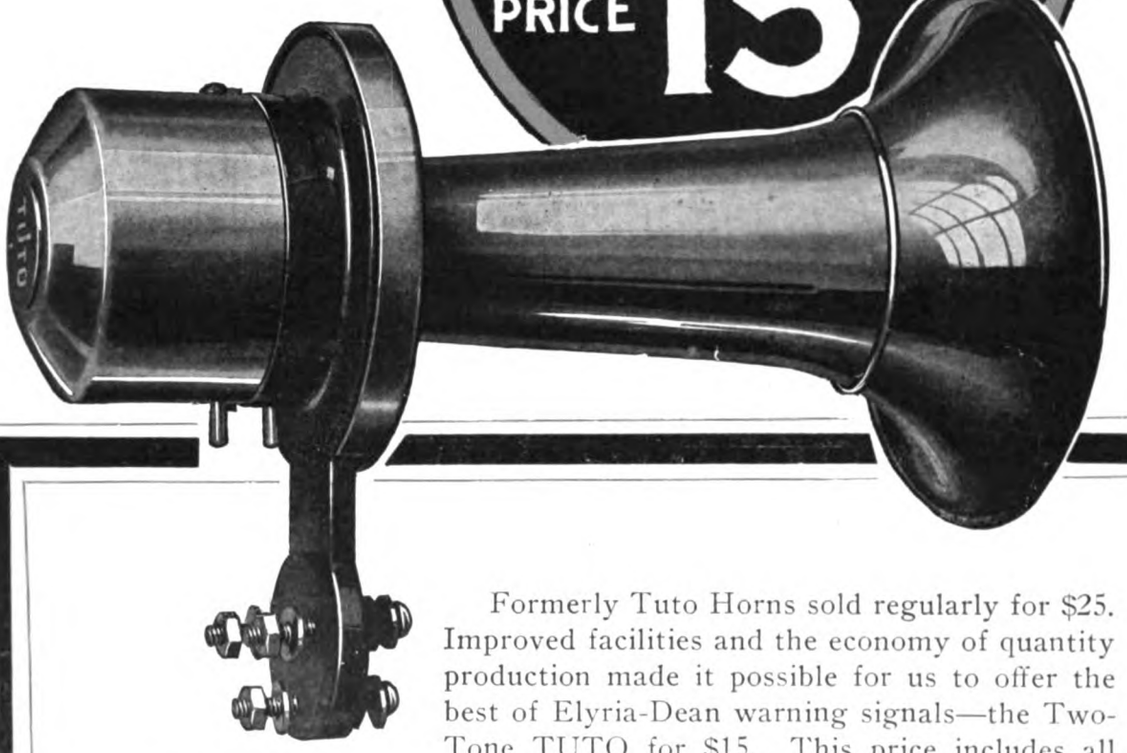
Kansas City, Mo. **San Francisco, Cal.**

"Look for Elyria-Dean Where Quality's Seen"

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Elyria-Dean
TRADE MARK

TUTO
HORN
PRICE $15.00



Formerly Tuto Horns sold regularly for $25. Improved facilities and the economy of quantity production made it possible for us to offer the best of Elyria-Dean warning signals—the Two-Tone TUTO for $15. This price includes all attachments and controls ready for a complete installation. Each Tuto carries our unlimited guarantee against defective materials, workmanship and operation.

A slight pressure on the control button gives a low but adequate warning, sufficient for ordinary conditions. A firm pressure on the control button instantly produces a loud, imperative demand for the right of way.

Elyria-Dean Products Manufactured Only By

THE DEAN ELECTRIC COMPANY

501 Olive Street, Elyria, Ohio, U. S. A.

Kansas City, Mo. San Francisco, Cal.

"Look for Elyria-Dean Where Quality's Seen"

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Mr. Dealer!!

Do you realize that in buying a car, a customer rarely asks about the **wheels?** That while his safety depends so largely upon these four corners of his car—the parts of all parts that must not fail—yet he accepts them without question?

Do you realize that it is up to you, Mr. Dealer, to see that this confidence is not misplaced, this feeling of security not unwarranted?

Protect your customer by recommending a wheel that is absolutely reliable, a wheel that you know will stand up in any emergency.

Hayes Wheels Stand the Test

HAYES WHEEL COMPANY
Jackson, Michigan

Ⓗ Ⓗ

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Facts &Figures

Of Interest to Everyone Connected With the Automobile Industry

To give an idea of the magnitude of our business, and that we really supply about 75% of the automobile trade in our line, we hereby give the following

SWORN AFFIDAVIT

Helen L. Hicks, of Borough of Brooklyn, City and State of New York, being duly sworn, deposes and says that she has been employed by the Automobile Supply Mfg. Co., a domestic corporation, for over three years last past in the capacity of billing clerk and general office work, and that she is familiar with the shipping slips, shipping books and bill books.

Deponent further states that on July 3rd last she examined said books and same show that the Automobile Supply Mfg. Co. shipped

In Feb., 1913—26,267 Bulb and Electric Horns of different sizes and types.
In Mar., 1913—36,167 Bulb and Electric Horns of different sizes and types.
In April, 1913—34,722 Bulb and Electric Horns of different sizes and types.
In May, 1913—41,215 Bulb and Electric Horns of different sizes and types.
In June, 1913—35,668 Bulb and Electric Horns of different sizes and types.

Sworn to before me this 14th day of July, 1913.

(Signed) HELEN L. HICKS.

(Signed) ISAAC BROWN,
Notary Public, Kings Co.

(The original of the above affidavit is on file in the office of this publication.)

The above statement of facts is sworn to. There is no bluff—no exaggeration—no misleading statements. It proves conclusively our claim, that we are the largest manufacturers in our line in the world.

Our sales average over 40,000 horns per month.
Newtone Horns sell on their merit, efficiency and price.

But even with such a production, we have not been able to supply the jobbers with the amount they require. It has been necessary to enlarge our plant; additional floors have been added—more machinery installed and an increased force of skilled mechanics.

Beside that, we have contracted with Kendrick & Davis Company, of Lebanon, for 2,000 motors per week for six months, so that we may catch up with our orders. This, together with our own production, will enable us to take good care of the manufacturers and jobbers as well as foreign orders.

Newtone Horns

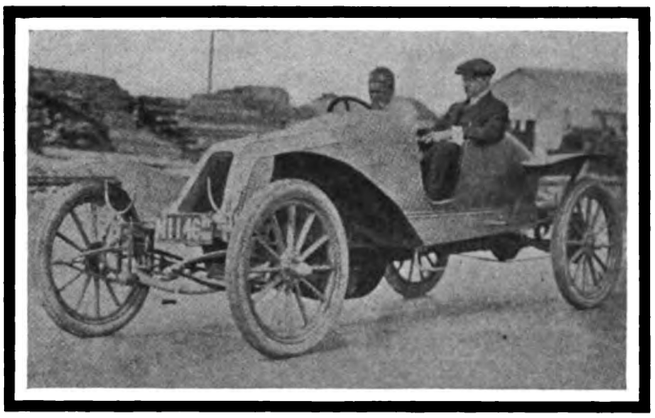
Manufactured and Guaranteed by the Largest Auto Horn Manufacturer in the World

Automobile Supply Manufacturing Company

220 Taaffe Place **Brooklyn, N. Y.**

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Th World's Record for Fuel Economy Again Goes to the FRANKLIN



The Franklin has always been known as the most economical car to operate—economical in gasoline consumption, economical in tires and economical in repair expense. This fact, which has been established by countless performances in the past, was confirmed in striking manner a few weeks ago.

On June 20th, 1913, Mr. S. G. Averell, of New York, a private owner, drove his special Franklin 83.5 miles on one gallon af gasoline over a course including city and country roads on Long Island. Mr. Averell was accompanied by Mr. Herbert Chase, laboratory engineer of the Automobile Club of America, who acted as official observer. See the official report of the Automobile Club of America.

The previous economy record was held by a Franklin which traveled 46.1 miles on one gallon in July, 1909. Even this was not the first Franklin Economy Record. In May, 1906, a Franklin won the Economy Test of the Automobile Club of America against a large field, with a record of 87 miles on two gallons of gasoline.

Franklin fuel economy is a long established fact. Franklin tire economy is almost as well known. In 1912 Franklin owners reported an average of 10,746 miles service per set of tires, with an average of 3,663 miles without puncture. Ninety-eight per cent. of Franklin owners do not carry extra tires. Experience has taught them that it is unnecessary.

There is a reason for this unusual economy of fuel and tires. It is due to Franklin construction. By reducing the "unsprung" weight (i. e., the weight below the springs) to an absolute minimum, by distributing the necessary weight properly, by proportioning each part of the car in correct relation to every other part, we have produced a light, evenly balanced car which runs with very little propulsive effect and very little strain on the tires.

The following figures will show you why the Franklin is so easy on tires and why it burns so little fuel per mile. These figures will mean nothing to you unless you compare them with the actual weight of your own car. Weigh your car with its full road equipment.

Weights and Tire Sizes of the Franklin:

	Pounds.	Tires.
Six "38" touring or phaeton	3,328	4½-5
Six "38" 7-passenger touring	3,480	5
Little Six "30" touring	2,993	4½
Four "25" touring	2,520	4

These weights include full equipment, gasoline and oil. Compare these weights and tire sizes with other cars. Franklins 700 to 1,200 pounds lighter, are equipped with tires as large or larger.

The Franklin direct-cooled engine is largely responsible for Franklin fuel economy. Gasoline consumption is cut squarely in two because direct cooling permits the motor to operate at the temperature of maximum efficiency for gasoline vapor. Fuel is saved from two ends, the smaller amount consumed per unit of horsepower and the smaller amount necessary to produce power to drive the lighter car.

The Motor Cannot Stall

The Entz electric starting system used on Franklin cars makes it impossible for the engine to stall. One switch controls both the starter and magneto. Throw on the switch and the starter goes to work. If by accident you cut off the gas the starter picks up the motor, and, as you give it gas again, away it goes.

The Best Car for Dealers

From the dealer's standpoint the Franklin is the most distinctive high-grade car on the market. It eliminates competition. It enjoys a clean unbroken record of success for more than eleven years. Franklin dealers are making money and have always made money.

We will be glad to mail on request a copy of O. K. Parker's interesting story, "A Strenuous Trip Into the Grand Canyon of Arizona." Mr. Parker is chief engineer of the Automobile Club of Southern California.

Franklin Cars Are Made As Follows:

Franklin Six "38" 5-passenger touring	$3600	Franklin Little Six "30" touring-car or 2-passenger phaeton	2900
Franklin Six "38" 4-passenger phaeton	3600	Franklin Four "25" touring	2000
Franklin Six "38" 7-passenger touring	3850		

Write for our catalogue—a book full of real automobile facts.

Franklin Automobile Company, 28 FRANKLIN SQUARE SYRACUSE, N. Y.

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BAILEY
ELECTRIC SYSTEM

The Coming Light

With the arrival of the perfect electric generator, electric lighting for motor cars is unquestionably displacing all other forms.

Electric Generators have heretofore been subject to criticism on account of their inefficiency and unreliability.

The Bailey Electric Generator, a wonderful dynamo only 5½ in. high, 5½ in. wide and 7½ in. long, weighing 17 pounds, designed by Benjamin F. Bailey, the famous Electrical Engineer, furnishes the first logical solution of the electric lighting problem.

In its construction, all unsatisfactory and trappy devices, such as reverse current relays, magnetic switches, vibrating contacts, delicate rheostats, slipping clutches, corroding platinum points and other trouble making appliances have been entirely eliminated.

Furthermore, there are no moving parts involved in the Bailey System of Regulation.

A patented mercury switch, the very simplicity of which has foiled other inventors, makes the construction of this generator so simple and compact, that in spite of the fact that its output running from 10 to 15 amperes is almost double that of other generators, the entire mechanism is little larger than a man's hand.

Another thing—due to its peculiar construction, when the big headlights are thrown on, it automatically supplies the additional current required for their lighting.

You are always assured of brilliant lights on all your lamps, and a sufficient reserve in the battery to take care of emergencies.

Prices of Complete Outfit

Model L 1, suitable for car lighting systems requiring 60 candlepower or less, $75.00.

This price includes generator, wiring, harness, 60-ampere hour storage battery and all controlling switches ready for installation. Price f.o.b. Grand Rapids.

Model L 2, suitable for car lighting systems requiring 60 to 100 candlepower, $125.00.

This price includes generator, wiring, harness, 80-ampere hour storage battery and all controlling switches ready for installation. Price f.o.b. Grand Rapids.

The above outfits can be attached to any existing type of car having an exposed rotating shaft on the power plant.

Send for our Booklet, "Electric Lighting Explained," which shows in detail how the generator is made and what it will do. Also describes the Bailey Combination Ignition, Starting and Lighting Unit.

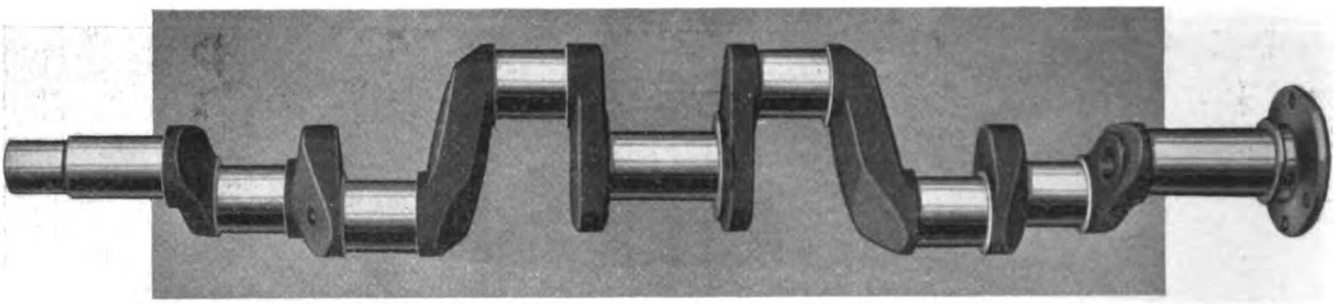
WILSON & COSGROVE—Exclusive Sales Agents

Suite 6---Goldberg Building,
DETROIT, MICH.

THE BAILEY ELECTRIC CO.

GRAND RAPIDS, MICHIGAN, U.S.A.

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The Service that Pleases—Plus Absolute Frankness

We are frank with our customers. We tell them exactly what we can do—and we don't jolly ourselves. If anything, we underestimate. We regard that as good business.

"Do just a little bit better than the customer expects and he will be pleased." That's an axiom of all good retail businesses. It applies with equal force to a proposition like ours.

For we don't make anything. We simply do the machine work.

Other concerns with like equipment can do the work—perhaps equally well. At least there is nothing to prevent their buying just as fine equipment, just as skilled labor.

But, we never crowd our shop—we believe that to have the preference and keep it we must give better SERVICE—do better work, make better deliveries.

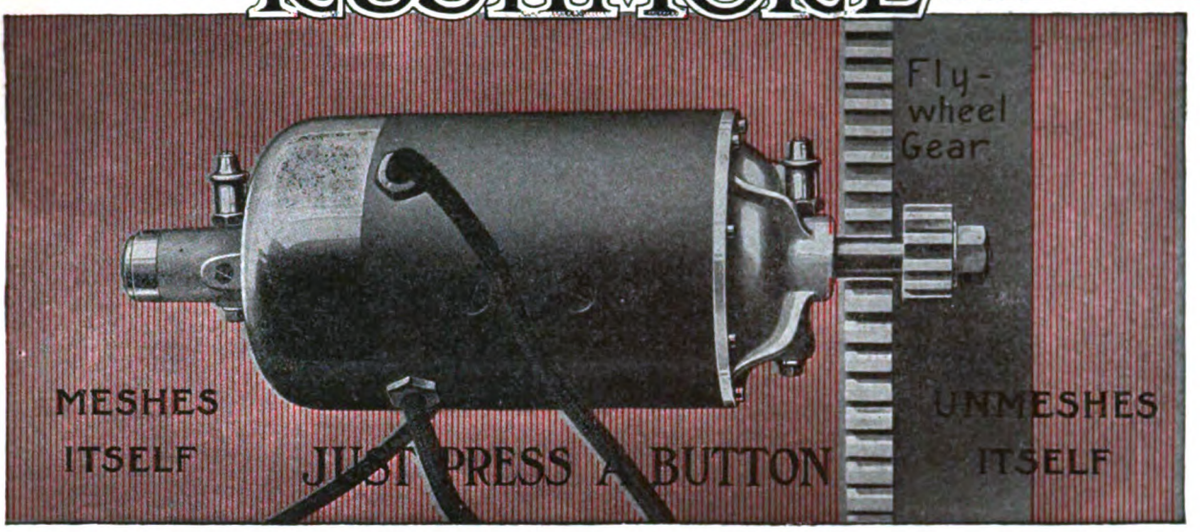
And that is the basis on which we solicit your 1914 contract for machining crankshafts. Experience, "Know how" and splendid equipment are the "rocks of our faith."

Notice—we make deliveries according to schedule—no excuses, no failures. Don't wait too long. To be sure of having MICHIGAN SERVICE on your 1914 crankshafts get in touch with us now.

MICHIGAN CRANK SHAFT CO.
LANSING, MICH.

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RUSHMORE



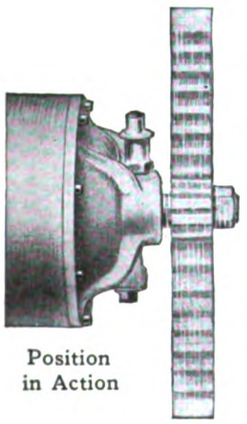
EFFICIENCY

Efficiency in a motor is the ratio of energy delivered to energy received—of output to input.

There is no such thing as an engine-starting motor of "100 per cent. efficiency," nor will there be till we have perpetual motion.

The actual efficiency of an engine starter is readily tested by measuring the brake power delivered, and the voltage and amperage of the current received.

Most engine starters have an efficiency of 60 to 65 per cent. at the motor pinion. If intermediate gears are used, the power delivered at the flywheel is further reduced some 15 or 20 per cent., making a net efficiency of about 45 to 55 per cent.



Position in Action

This is for geared starters, most of which operate on a 6-volt battery, taking 100 to 125 amperes for an engine of fair size. A flywheel starter which takes the same number of amperes at *double the voltage* is likely to be only one-half as efficient as the geared starter.

The most efficient starter possible is the single-reduction motor acting directly on the flywheel, because it operates at favorable speed without needless gearing.

Owing to certain refinements of design and the absence of intermediate gears, the Rushmore Starter has an efficiency of 75 per cent. at the flywheel rim. It costs less for battery than any other electric starter made. For equal current, it turns the engine from ¼ to ½ faster than any other starter.

Rushmore Dynamo Works, Plainfield, N. J.

LONDON PARIS BERLIN

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Dealers,

What About the Call for a Better Tube?

The universal demand among motorists is for a better tube. No one knows that better than you do, Mr. Dealer.

You're the man next to the user. If any one kicks, you get the **kick.** But that's not the worst of it. Motorists are game buyers, and if they buy a tube from you that gives poor service—goes to pieces—they say nothing to you about it, but go elsewhere next time and buy another make. And they advertise the bad deal among their friends.

Think what a lot of business you lose—in tubes and in other lines—through the sale of poor tubes.

Mr. Dealer, investigate the **quality of the tube** you are selling. Name or reputation count for little these days. Motorists want **quality tubes,** regardless of who makes them.

What about the call for a better tube? Are you going to continue selling shoddy tubes, or are you going to give your customers the QUALITY TUBE they are calling for?

5-X-Test Answers the Call

The Mansfield Tire & Rubber Company heard the CALL FOR A BETTER TUBE a year ago. We saw the great opportunity awaiting the maker who would give the TUBE QUALITY motorists wanted. We arose to the opportunity, and now we present the 5-X-TEST TUBE—quality supreme.

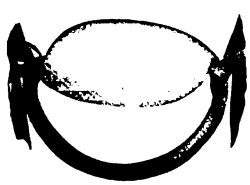
In our determination to give QUALITY we simply forgot about our profit—we only added a fair, living profit.

Dealers who have tested 5-X-Test, and are selling it, are high in their praise of the quality.

We want to send you a sample section of the 5-X-Test Tube. We want you to test it out—compare it with the tube you are now selling. Then we'll let you be the judge. THE QUALITY WILL SELL YOU 5-X-TEST TUBES. Fill out and mail the coupon.

Made of Fine Grizzly Crepe—Red and Grey

In making 5-X-Test Tubes we use very fine rubber, to insure finest quality. This fine grizzly crepe is prepared by a special formula which gives it greatest strength, toughness and life. 5-X-Test is made in both red and grey.



Exacting Building

Mansfield 5-X-Test Tubes are built under the most exacting methods. The raw gum is first inspected by experts. If the slightest imperfection is found the stock is thrown out.

The splicing is done with the most hair-splitting precision. After the tube is cured, it is subjected to a very rigid inspection. The ends are then spliced by a scientific process. Then the tube is again inspected by a scrupulous tube expert. The slightest imperfection disqualifies a 5-X-Test Tube. Only tubes proved-by-test to be absolutely perfect ever reach the user.

The Test of Strength

Note this picture. It is from an actual photograph of a Mansfield regular stock tube, inflated to more than five times its normal size.

That is the **Test of Strength** of **Mansfield 5-X-Test Tubes.** When Mansfield tubes will stand that test, they will surely stand **any test** in the tire, in hard use.

100 Per Cent. Efficient

The Mansfield 5-X-Test Tube is 100% efficient. It gives users the service expected from a tube—for we build that service into every 5-X-Test Tube that leaves our factory.

Sell It With Confidence

You can sell this tube with all confidence—and the quality will back you up. This tube will bring repeat orders for you, but it won't come back.

Stock this tube and it will be a big asset to you for future business.

5-X-Test quality will give the satisfaction that builds business in other lines.

Fill Out the Coupon

Cut out the coupon, fill in your name and address, mail it to us, and we'll send you a sample section of the 5-X-Test Tube, and give you our proposition. It's a money maker for the dealer. It gives the dealer bigger profit.

Fill out the coupon now and mail it.

The Mansfield Tire & Rubber Co.,
Mansfield, Ohio.

We have read your Dealers' announcement in Motor World, and you may send us a sample section of your 5-X-Test Tube.

Also send us your special proposition on one-third gross assorted sizes, half grey and half red.

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The Cable-Structur Tire

Dealers, ponder these two questions: Are you selling a tire that builds business? Are you making enough profit on tires?

Those are vital questions to every dealer, and worthy of your deepest consideration.

If you are selling a tire of questionable quality, your business—and your success—is at stake. Poor quality tires never made money for any dealer. But poor tires have ruined hundreds of men like you. Poor tires are sure to knock you—sure to drive away business.

And then think who's making the profit on the tires you sell—you or the manufacturer?

In the Cable-Structur Tire we offer you a real business-builder—a tire that will increase your business. The quality we build into Cable-Structur guarantees satisfaction to users. One Cable-Structur tire in use will sell dozens of others for you.

And then — Cable-Structur means a bigger profit for you. Write for our special proposition and let us prove it.

40,000 Tested

Motorists have already tested out more than 40,000 Mansfield Tires. Now the demand calls for our utmost capacity. That extensive test has proved Cable-Structur mileage to be between 7,000 and 12,000 miles.

Knowing that, is there anything to doubt about this tire?

Saves Rim-Ruin

The Cable-Structur base does away with the clinched base, and makes rim hooks unnecessary. Without the use of rim hooks, no rim-ruin is possible. 24 endless steel wires, 12 in either side, form the base. These cables give a tensil strength of 16,800 pounds. So nothing can force the tire off the rim, over the flanges.



Hand Building

Cable-Structur Tires are hand built by tire experts. These men never hurry. We pay them by the hour at highest wages. So there's no desire to rush or slight the work.

Those are some reasons why you should sell Cable-Structur tires. Write for our new catalog. It tells all

Some good territory is still open. Write for our special Cable-Structur proposition.

Mansfield CABLE-STRUCTUR

THE MANSFIELD TIRE & RUBBER CO., MANSFIELD, OHIO

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SPARTON

THE ELECTRIC SIGNAL DE LUXE



THE "SPARTON" WILL OUTSELL ANY OTHER MAKE OR TYPE OF ELECTRIC WARNING SIGNAL ON LOOKS, WARNING NOTE DELIVERED, CURRENT CONSUMPTION, GUARANTEE OR PRICE.

Dealers everywhere are adding handsome profits to their accessory business, for the "SPARTON" is the ONE logical warning signal that meets the owner's requirements.

It's RIGHT through and through and the price is no greater than you are expected to secure for Buzzer signals.

There is a "SPARTON" for every car, either dash or underhood model. Any standard finish. All the "SPARTONS" you want when you want them. One price to all Dealers, NO discrimination, NO exclusive selling arrangement.

PRICES $10.00 to $15.00

THE FAN BUSINESS WE DO PROVES OUR FANS ARE THE BEST.

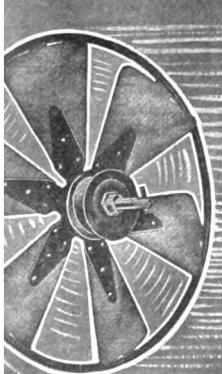
Standardized parts not only increase manufacturing efficiency, but later duplication in case of accident is possible on short notice.

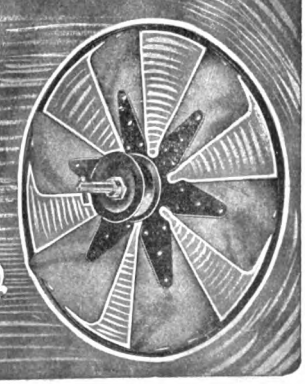
Automobile Engineers in the designing of new cars universally indorse our ONE PIECE BLADE RADIATOR FANS. The QUALITY is known, and the cooling results are accepted as maximum.

In solving the cooling problems of most of the better car and Motor Manufacturers we oftentimes find it necessary to meet certain conditions heretofore unknown in other factories. In so far as is possible we build enough STANDARD sizes to meet any cooling requirement. The chances are nine in ten that we can meet yours without making a special job.

Our catalogue is pure gold to the Engineer, who would be interested in knowing what we know about Automobile Fans.

Our experience of years is tabulated in concise form. It is really a text book on cooling. It's FREE to you.

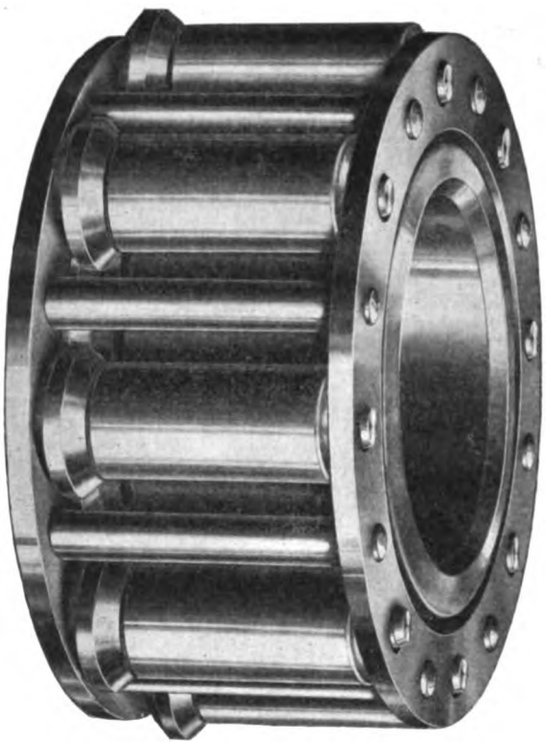




SPARKS-WITHINGTON CO.
JACKSON, MICH.

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"BOWER SAVES POWER"



How Bower Saves Power!

The Bower Bearing has a cylindrical roller with a flanged head at one end. The flange takes care of end thrust, the roller of radial load. This simple division of labor gives two extraordinary advantages to Bower Bearings: (1) it reduces friction to a minimum and (2) it obviates the need of any adjustment. Moreover, the raceways and the rollers being at all times parallel, the rollers are self-aligning. Thus a maximum diameter of rollers can be used; their speed of rotation is comparatively low; wear is minimized, and long life is assured to the bearing.

BOWER ROLLER BEARING CO.

DETROIT, MICHIGAN

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WARNER

QUALITY AUTO-METER

1,000 Miles a Minute

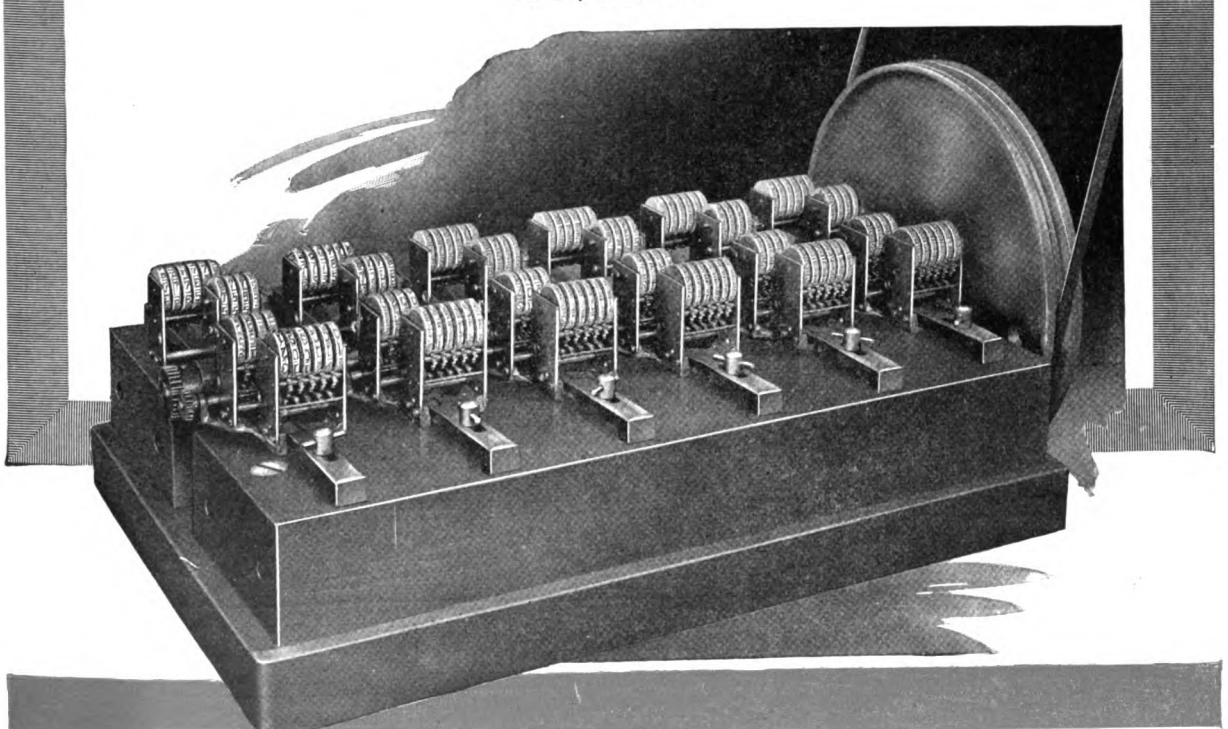
THE odometer of every Warner Auto-Meter made is tested, on the machine shown below, at 1,000 miles per minute—***one thousand times as fast*** as it is ever likely to be called on to run, and ***five hundred and fifty-eight times as fast*** as any automobile has ever been driven. It must show absolute accuracy in hours of running at this speed, or it is thrown in the scrap heap. The world's fastest motor car record is 106 miles, 382 yards, in one hour, recently made at Brooklands, England. The Warner odometer is tested at a speed ***five hundred and fifty-eight times as great.***

In ordinary motoring a speedometer is very rarely required to record a speed as high as 60 miles per hour—because at this speed the pleasure of motoring is lost. A speedometer which registers correctly at a mile-a-minute speed can, therefore, be relied on as accurate. We prove the Warner absolutely accurate at a speed ***one thousand times as great.***

No other speedometer made is given the severe tests and careful inspections to which the Warner Auto-Meter is subjected.

If you knew more about the fine interior construction of the Warner you would better understand why the vast majority of high-priced cars are Warner-equipped.

The Warner Auto-Meter Factory
Beloit, Wisconsin



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Velie

You Take No Risk With This Car!

After five years of constantly increasing success, Velie now ranks with twelve leading cars in the world. Big increase in production for 1914. More cars—bigger line—greater facilities.

The Velie has made good. There is a lot in this fact for every automobile dealer to consider. Sold for five years with practically no advertising, it has shown a steady, healthy growth each year. With your own knowledge of selling conditions, think what this means.

Sales for 1913 doubled sales for 1912, and every Velie owner is satisfied. Advance inquiries for 1914 models are greater than ever before.

Will Take Advantage of This

Now we are ready to take full advantage of the big tendency in favor of the Velie. We are greatly enlarging our facilities for building cars. Already well up among the leading twelve manufacturers in the country, we will double our output for 1914.

All Dealers Can Share in This

We have widespread representation now, but we can give more dealers the advantages of handling the Velie line. We are opening a big advertising and selling campaign that is going to be, first of all, for Velie dealers. Most of it will be co-operative advertising, done for the dealer in his own territory, where every bit of interest it creates is centered on his garage.

It is the dealer who acts first in unoccupied territory who is going to get the benefit of this big co-operative campaign.

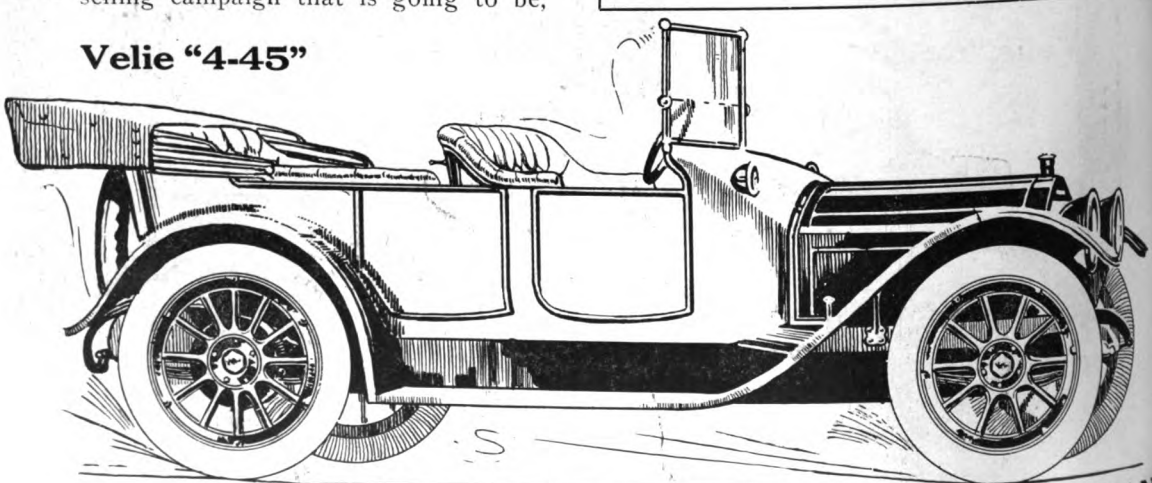
The dealer who handles the Velie car is in business to stay.

The Velie is not an untried car. It is used by thousands of satisfied owners

Send for Our Prop

Let us put you in touch with what the Velie Dealership means—not only in the car itself, but in the money-making co-operation which we extend to every Velie dealer. Velie

Velie "4-45"



VELIE MOTOR VEHICLE COMPANY

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Velie

Tremendous Resources—Co-operation!

g features of the Velie line: New "6-50," first ght Six of its power—the kind of six buyers nt. New "4-45," bigger, better, more ready ler than ever before. New "4-35."

and is backed by tremendous resources.

Velie service to owners and Velie co-operation with dealers is the result of the tremendous resources of the Velie Company.

We Could Claim Superiority

Measured by every standard of comparison, we could claim supremacy in every feature over any other car at anywhere near the price, and we could prove it. But we leave the answer to Velie superiority to satisfied owners—to the man who knows proper motor car construction. Read Velie specifications. We will send you our catalog.

osition to Dealers

ales helps, Velie advertising, Velie service methods are f supreme importance to you. Send for our proposition oday.

The Velie Organization

Here are the men behind the Velie car—

President W. L. Velie, president of the Velie Carriage Co., Velie Engineering Co., vice-president of the John Deere Co., chairman executive board John Deere Plow Co.

General Manager L. E. Nutt, associated with Velie interests for twelve years.

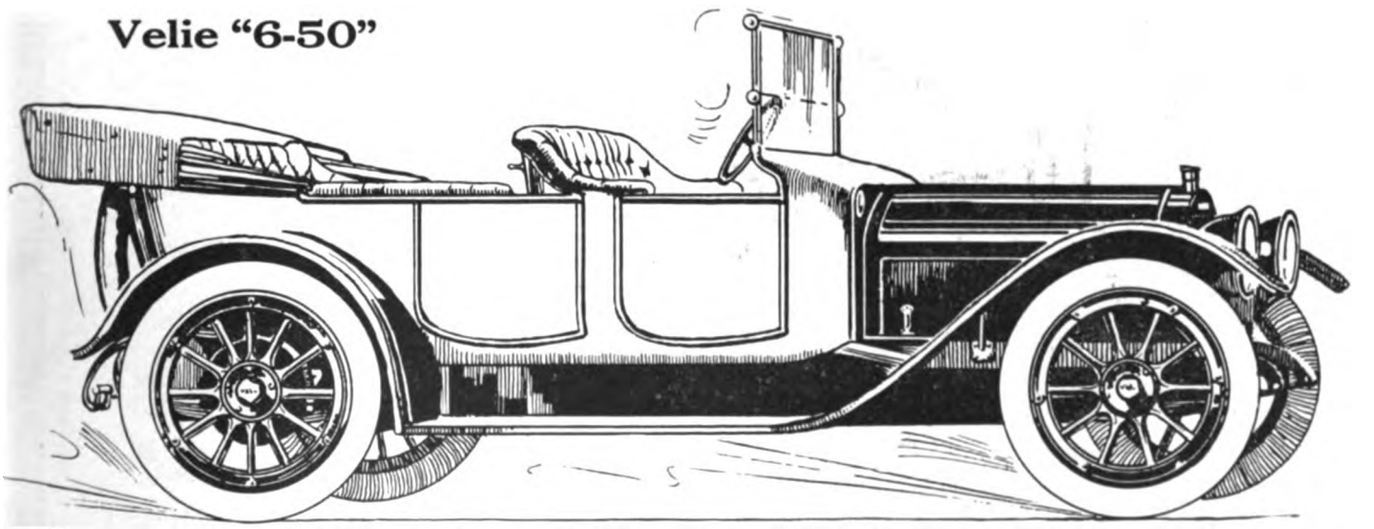
Director of Sales C. E. Giltner, formerly of the Thos. B. Jeffery Co., Moline Plow Co., Racine Statley Co.

Chief Engineer C. B. Rose, associated with the development of the automobile since the earliest days. Formerly with the Olds Motor Co., Chalmers Motor Car Co. and with Velie Motor Vehicle Co. from the start.

Factory Superintendent E. H. Sohner, formerly shop superintendent of the Olds Motor Works, Owen Motor Car Co., Universal Motor Truck Co., and associated with the development of first high-grade car in America.

Superintendent of Truck Manufacturing C. W. Green, for twelve years with Olds Motor Works.

Director of Advertising G. H. Bryant, formerly with Locomobile Company of America and Franklin Automobile Company as advertising manager.



102 VELIE PLACE, MOLINE, ILLINOIS

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75,000 Continental Motors



CONTINENTAL MOTORS ★ Powerful the Nation ★ AMERICA'S STANDARD

OVER 3,000,000 H.P. TO HELP YOUR SALES

"The Almighty fights on the side of the heavy battalions," said Napoleon.

Every salesman knows how true that is—how he must build up his "selling talk" point by point, how he must heap reason on reason, and how back of his spoken word must stand the reputation of the article and the great force of its advertising.

And the battle as a rule goes to the side of the heaviest battalions.

Every Motor Vehicle Built Around a Continental Motor Has the Biggest Factor in the Industry Backing It.

Has 75,000 Continental Motors giving world-wide satisfaction, delivering 3,000,000 h.p. in daily use—every motor in a high-grade, long-lived motor vehicle.

Offer any one of these 75,000 Continental converts a car with any other motor and your sale is 100% harder.

Offer him a motor vehicle with a Continental motor and your sale is half made.

Confidence is the backbone of business, and CONTINENTAL CONFIDENCE has been won because it has been earned.

And back of every Continental-powered car is Continental advertising—the national campaign of which the first broadside is just being fired. Added to the manufacturer's advertising of the car is our advertising of the motor—the costliest and most vital factor in that car.

On the side of the heavy battalions—is that where you are lining up for the campaign of 1914?

CONTINENTAL MOTOR MFG. COMPANY

Largest Exclusive Motor Builders in the World.

DETROIT, MICH.

Factories: Detroit and Muskegon, Mich.

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"American" Axles

Daily Prove the Worm Drive's Extraordinary Qualities



FULL FLOATING "American" Axles with the Lanchester-Daimler worm Drive have been regular products of this company for nearly two years. They have successfully met every test required for gasoline and electric pleasure cars of the highest grade.

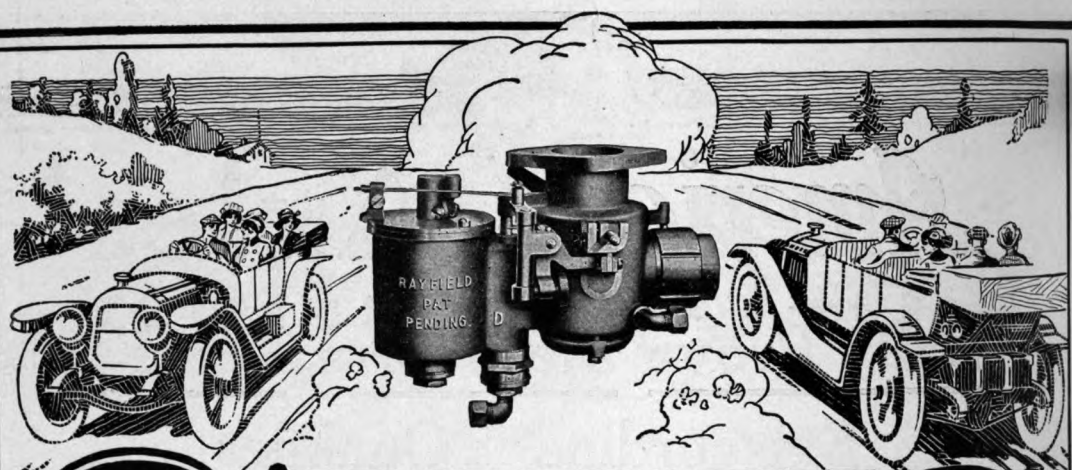
The Lanchester-Daimler Worm Drive has simply duplicated in America its splendid record abroad. It is the very best form of a type of gear whose merits are beyond question.

When we secured the sole American rights as axle manufacturers of this drive, motor car builders acknowledged that its perfect production by us for both gasoline and electric pleasure cars was a foregone conclusion.

They knew that we would bring to its construction the same quality of engineering skill that has given the first place to our Bevel Drive Axle, and which is responsible for the fact that today 80% of the high grade electric pleasure cars in this country use either that or the Lanchester-Daimler Worm Drive in an "American" Axle.

THE AMERICAN BALL-BEARING COMPANY, Cleveland, Ohio

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RAYFIELD
CARBURETOR

Rayfield Carburetor Has Always Been Right

The correct principles of carburetion were embodied in the first Rayfield.

Hence it has not been necessary to make important alterations in the design or operation of this carburetor.

To our determination to be right in the beginning, the Rayfield owes its reputation of today, and the advance it has made over carburetors that were in the field long before it appeared.

And because the Rayfield was correct in design, construction and operation, it develops the greatest economy, the greatest flexibility, the greatest power and the greatest speed of which a motor of given size is capable.

Rayfield records on the track are the most conspicuous, perhaps; but the Rayfield records of satisfied users—men who will always be Rayfield users, no matter what car they drive—are the ones for you to consider.

Because, it is in every day, year round use that the Rayfield has shown unexcelled capacity for economy, for operating in wide ranges of temperature and altitude without change of adjustment.

These are the features you ought to know about, whether you are a manufacturer, dealer or car owner.

There are thousands whose experience has convinced them that the Rayfield is far and away the best carburetor for them to fit to their cars, to sell and to use.

Your first step toward the Rayfield Army would be investigation, and we only ask you to investigate.

Findeisen & Kropf Mfg. Co., 21st and Rockwell Streets CHICAGO

BRANCHES: 1140 Michigan Ave., Chicago 1902 Broadway, New York 1211 Woodward Ave., Detroit

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Co-Operation

of the manufacturer and dealer is necessary to make the greatest success.

A factory is handicapped by a poor dealer.

A dealer is handicapped by a factory whose product does not stand up, is too high priced, or is not up to date.

The dealer can no longer force upon the public *any* car regardless of reputation, price or looks.

Enough cars are being built to supply the demand and the public is buying the cars in which it has confidence, which it knows are not out of date, and the price of which represents good value.

Was not the dealer seriously handicapped in the season of 1913, if he was trying to sell a high-priced four-cylinder car, *or* if he did not have a six-cylinder which had behind it years of service to prove it was right, *or* if he was trying to sell right-side drive or a car with tool boxes, etc., on the running board? He might just as well have tried to sell a car without fore doors.

Remember, the advanced manufacturers are not really leading the public in ideas.

The manufacturers with advanced ideas are those who have seen the trend of the public demand early.

There were less than half a dozen manufacturers who discovered before the 1911 season, that the public wanted fore doors.

The dealers who did not have cars with fore doors will remember their troubles.

The dealer who did not have a left-side drive in 1913 not only was handicaped but was forced to talk against *what he will be compelled to recommend in 1914.*

How many manufacturers saw the six-cylinder demand six years ago and developed a Six? Not many.

And yet there are more than five times as many manufacturers offering six-cylinders today than there were a year ago.

This means that more than 80 per cent of the Sixes offered today are first-year Sixes—*unproven.*

PREMIER had fore doors in 1911.

PREMIER has been building Sixes seven seasons.

PREMIER had left-side drive in the summer of 1912.

PREMIER had clean running boards, no projecting hinges, etc., in the summer of 1912.

PREMIER a year ago had features which the latest announcements are claiming as new.

There is an advantage in the dealer having what the people want, when they want it, and *not being a year late.*

What the Premier factory has done, the advanced ideas the Premier product represents, and the results of the sales, show the co-operation of the Premier factory and Premier dealers.

Premier sales in the season of 1913 more than doubled those of the previous year.

The increase in		Chicago was	93 per cent
"	"	" Boston was	94 per cent
"	"	" Indianapolis was	67 per cent
"	"	" New York was	55 per cent
"	"	" St. Louis was	87 per cent
"	"	" Los Angeles was	49 per cent
"	"	" Pittsburgh was	19 per cent

On July 1st there was not six Premier dealers in the United States who had as many as two new Premier cars in stock or in the freight yards.

Eighty-five per cent of the dealers who were selling Premier cars four years ago are selling Premier cars today. Some of them were small dealers then, but you know how Premier dealers have grown.

We have an interesting proposition for the live dealer.

Premier will maintain its lead in 1914 and again prove a profitable line for the live dealer.

Are you interested in knowing how these dealers doubled their business?

We can tell you, and will gladly do so.

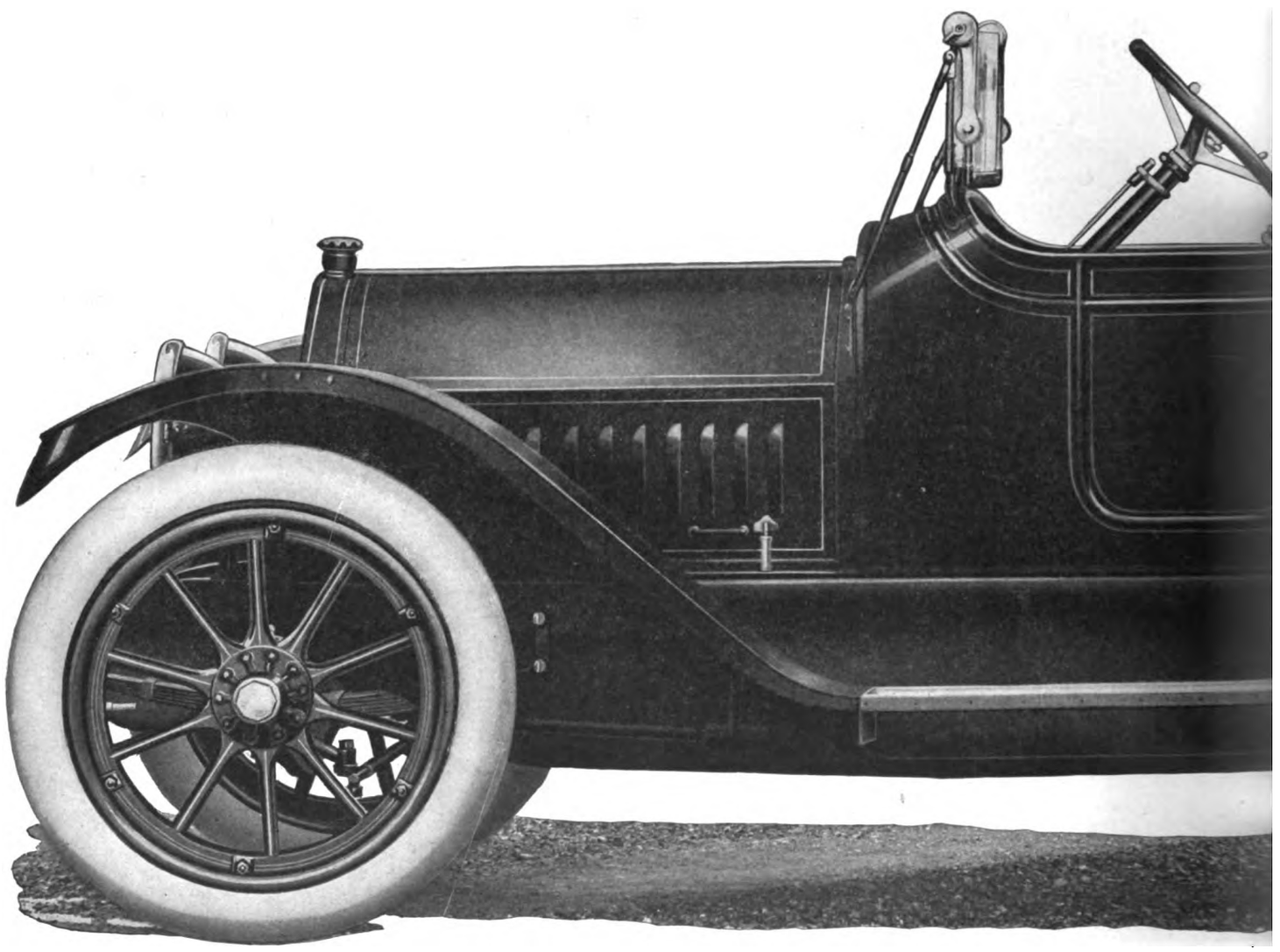
Premier Motor Mfg. Company, Indianapolis, Ind.

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QUALITY CAR
Premier
PREMIER MOTOR MFG. CO. INDIANAPOLIS, IND. U.S.A.

6-60

2, 5, 7-Passenger Bodies



America's Greatest Touring Car

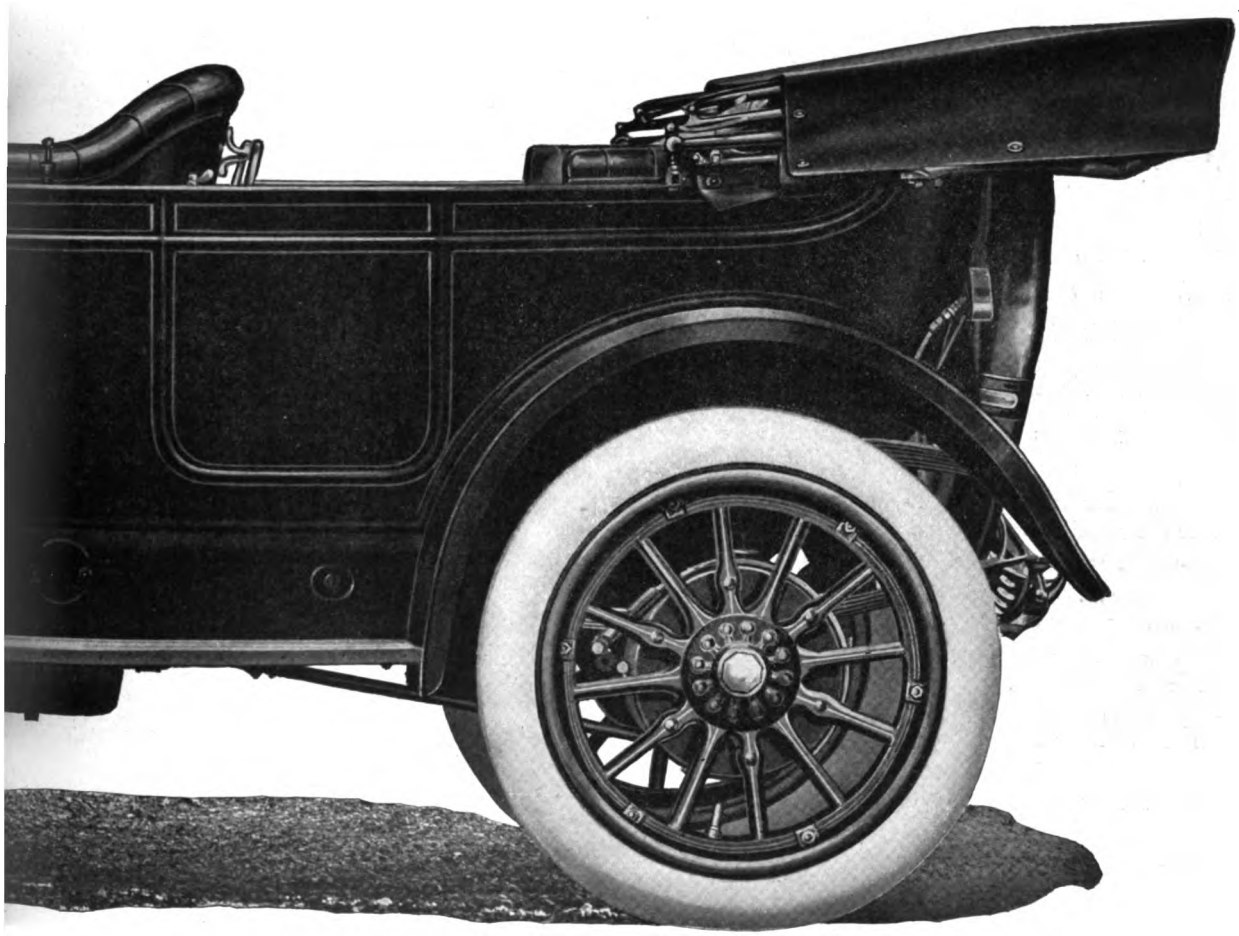
The car which more than doubled the sales for the factory and the dealer in 1913

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QUALITY CAR
Premier
PREMIER MOTOR MFG. CO. INDIANAPOLIS, IND. U.S.A.

6-40

2, 5, 7-Passenger Bodies



PREMIER

Has led the five leading high-grade car builders in **producing** a Six-Cylinder Car with a list price of less than $3000

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Selling Service Means What? Selling Satisfaction

With an automobile, does the carrying of a big stock of parts, having an emergency trouble car available all the time, and a man at the telephone constantly, *necessarily* mean Selling Service?

Could a railroad claim to sell service which has poor engines and rolling stock, and whose trains do not keep going, although this railroad might at all times have an emergency train to send to the help of the stranded passengers?

Taking you to your destination without delay or interruption is dependable service.

Can an automobile manufacturer or dealer sell the kind of service the people are looking for?

Not unless it is built in the car.

The dealer may assure his patron of prompt assistance and quick relief but this does not make the car he is selling any more reliable or satisfactory.

The public, the user, knows the cars which give service and are dependable.

What are the weaknesses of your car? Should they be there? Does the factory know they are there? Do they realize that in order to really sell service, that service must be built in the car?

Numerous Premier owners have toured Europe in their cars. When we have been asked what, if any, parts should be taken along, we inquired if experience has shown any parts as unreliable. As a result they left without extra parts. And we have never had a Premier driver stranded in Europe.

Is it reasonable to suppose that ten private owners would have left their chauffeurs at home and undertaken a trip across the continent in 1911, in their Premier cars, if the experience they had had with their Premiers had shown them unreliable or had failed to prove them absolutely dependable?

Records show that in one of the largest cities in America, one of the largest Premier distributing points, Premier has a record of not having lost a Premier owner in three seasons.

Would this be possible if satisfaction was not built in the Premier and if these customers were not getting satisfaction out of their Premiers?

Remember, every car sold represents to the dealer either an asset or a liability.

Every customer is a knocker or a booster. If he is getting service out of his car he is a booster. If he is not, he will tell his troubles.

Investigate Premier's record, analyze Premier construction, and compare it point for point with any car of American or European manufacture, and you will find the answer.

Are you interested in knowing how Premier dealers doubled their business?

We can tell you, and will gladly do so.

Premier Motor Mfg. Company, Indianapolis, Ind.

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Small Duplicate Parts

made on screw machines are the vital links in the motor car. They connect all the other larger and heavier parts and unify them into the finished vehicle. Ultimately they bear the brunt of all the stress and strains.

Why not insure the working life and efficiency of your product with Namco screw machine products – the links that hold up under pressure?

The accuracy and finish of Namco parts are safeguarded through every process. The automatic precision of the machines is supplemented by a thorough inspection system, which assures you of parts that are ready to use and easy to assemble just as they come to you.

We can give you excellent delivery service right now, and will quote you dates and prices promptly on receipt of your models or blueprints. Send them direct to our "Quotation Dept."

You can always get immediate delivery of A.L.A.M. screws and nuts, castellated and plain; and on U.S.S. and V standard nuts, Cap and Set screws, and Hexagon Brass Nuts.

THE NATIONAL-ACME MANUFACTURING CO.
SIXTH CLEVELAND CITY

NEW YORK, 77 White Street
CHICAGO, 23 So. Jefferson Street
BOSTON, 141 Milk Street
DETROIT Majestic Building
ATLANTA, Third Nat'l Bank Bldg.
MONTREAL, In St. Henri at G. T. R.
Warehouses: New York, Chicago

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HAYNES

America's First Car

Scores Another Big First

Ever since Elwood Haynes created America's first gasoline car and drove it down the streets of Kokomo two decades ago the Haynes has been a pioneer, a pace-maker in developing the automobile and adding new improvements. At the top of the next page is a long list showing that the Haynes has been first to use a majority of the important improvements. And now the Haynes again comes to the front, as the

First of the old-line cars to adopt the

Vulcan Electric Gear Shift

as standard equipment on all models

The new Haynes models, are first for up-to-date equipment. They have absolutely everything that makes a car easy to start, control and ride in. The Haynes reputation is of the best. Haynes reliability and economy are common talk with the trade.

They have complete electric equipment; electric starter, electric lights, electric gear shift.

The cowl-board conveniences include switch for electric lights, oil sight feed, ignition, automatic cut-out for lights, dash light, auxiliary air-pressure pump, air gauge and speedometer.

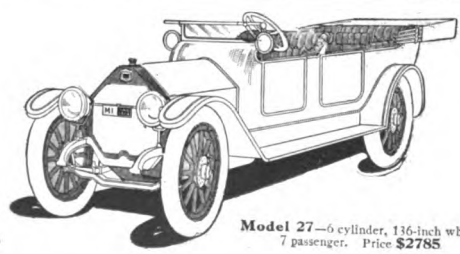
Regular equipment includes mechanically operated time pump. The gasoline supply is automatic pressure-feed. The gasoline capacity is larger than the average.

The design is new. The lines are longer and more sweeping. It's a grand car through and through.

Read the specifications, see what great cars we have for you in the new models and remember that same sturdy reliability is put into these cars as has been built into the Haynes for twenty years.

Specifications of The New Haynes

Motor—Bore 4 1-4 in., Stroke 5 1-2 in. L-head Haynes. Cylinders cast in pairs.
Cooling—Centrifugal pump and pressed steel fan.
Wheel Base—Model 26, 130. Model 27, 136. Model 28, 118.
Ignition—American Simms Magneto.
Lubrication—Splash and gravity feed.
Control—Left hand. Vulcan Electric Gear Shift.
Transmission—Selective Type, three speeds forward, one reverse.
Steering Column—Worm and worm gear type.
Clutch—Haynes contracting steel band.
Rear Axle—Full Floating Timken on Models 26 and 27; McCue, Model 28, Gourney Bearings.
Front Axle— I-Beam. O. H. steel heat treated.
Wheels—Artillery type. Funk demountable rims.
Tires—Models 26 and 27, 36 x 4 1-2 Model 28, 34 x 4.
Springs—Front Semi-elliptic 39 1-8 x 2, rear 48 x 2
Brakes—15 1-4 external and 15 internal Models 26 and 27. 12 and 16 internal on Model 28.
Finish—Indiana dark blue body. Pacific Tour gray, optional.
Gasoline Feed—Pressure. Automatic feed.
Upholstery—Buffed leather—deep cushions.
Starting and Lighting—Leece-Neville electrical system.
Dash Equipment—Electric lights, sight oil feed, automatic cut-out for generator, dash light, auxiliary air pressure pump, air gauge and speedometer. Models 26 and 27 have rim wind clock and shock absorbers.
Other Standard Equipment—Top, top cover of silk mohair, mechanical tire pump, rain vision ventilating wind-shield, Vulcan electric gear shift, two large electric headlights, electric side lights, electric tail light, full dash equipment, electric starter, generator, 80 ampere hour storage battery, speedometer, horn, coat and foot rails, tire irons, full tool equipment, one extra demountable rim and Collins curtains.



Model 27—6 cylinder, 136-inch wheelbase, 7 passenger. Price **$2785**

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Other Haynes Firsts

The first gasoline driven American-made car.
The first two-cylinder opposed motor car.
The first user of aluminum in crank case.
The first to use nickel steel in axles.
The first side door car.
The first to use throttling carburetor.
The first to use make and break spark.
The first to use the jump spark.
The first to use electric ignition.
The first to use a magneto.
The first to use double independent system of ignition, through two sets of spark plugs.

First Come—First Served

will be the rule in allotting cars to the few new dealers which the increased Haynes output permits us to serve.

Contract now for your share of

Haynes Cars With the Electric Gear Shift

You know what happened when the electric self-starter was introduced a couple of seasons ago. You recall how prospects flocked to see the cars with the new feature. You remember how the electric starter idea took and you also know what a hit the introduction of electric lights made. It's easy to forcast the hit that the electric gear shift will make. It is a greater improvement than either electric starter or lighting.

Possessing qualities for which they are famous—backed by 20 years of reputation—possessing everything else in modern equipment, the new Haynes models with Vulcan Electric Gear Shift give you the greatest selling proposition in the field.

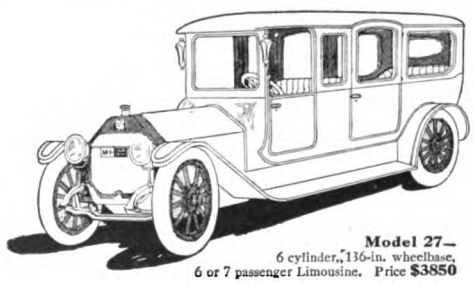
Regular Haynes dealers, of course, have the first claim on our output, but our capacity has been increased and there will be cars enough for a few new dealers. If you want to grasp this unequaled opportunity, better telegraph, write us special delivery or better still, hop on a train and come to Kokomo.

Haynes Automobile Company 1 Main St., Kokomo, Indiana

PRICES

Model 26—130-in. wheelbase, weight, 3800 lbs., 2 pass. Roadster, 4 or 5 pass. Touring, **$2700;** Coupe **$3200**
Model 27—136-in. wheelbase, weight, 4000 lbs., 6 or 7 pass. Touring - - - **$2785;** Limousine **$3850**
Model 28—118-in. wheelbase, weight, 3450 lbs., 2 pass. Roadster, 4 or 5 pass. Touring, **$1985;** Coupe **$2700**

Hand levers optional on all models at $200 reduction.

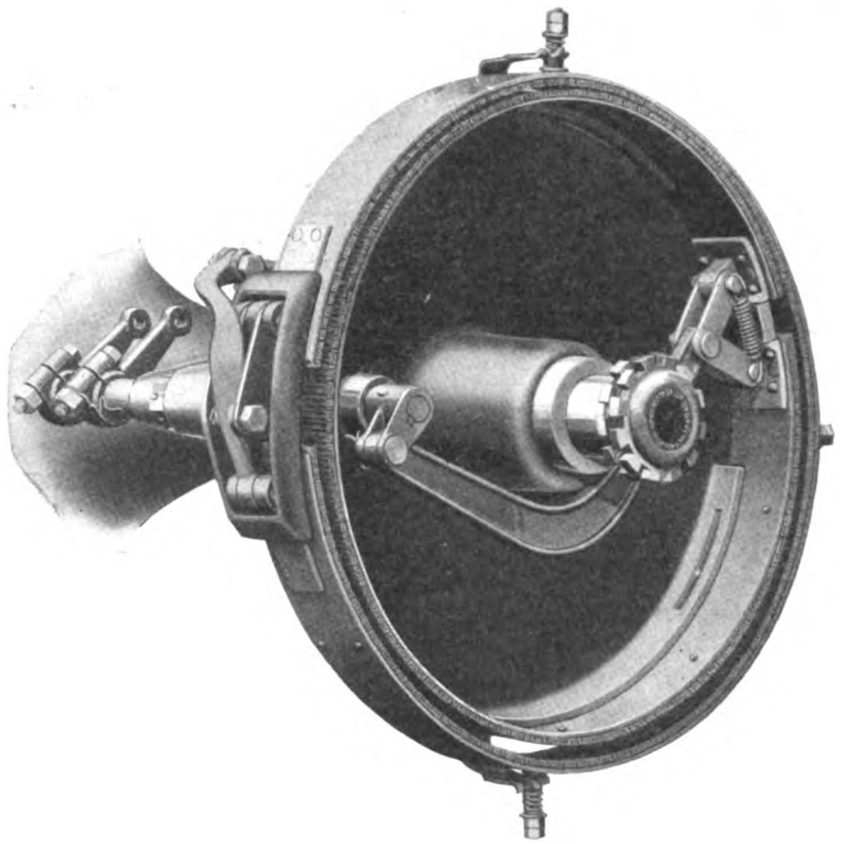


Model 27—
6 cylinder, 136-in. wheelbase,
6 or 7 passenger Limousine. Price **$3850**

HAYNES AMERICA'S FIRST CAR

HAYNES AMERICA'S FIRST CAR

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Brake construction of the Lewis single-bearing full-floating type rear axle

LOOK over this brake construction carefully and you will catch the enthusiasm that comes from viewing a piece of workmanship exceptionally well executed. Good brakes—reliable, powerful in action, sure always—are vital.

You will observe that the bands are full floating, toggle operated and powerful; both internal and external, 16 inch diameter by 2¼ inch face. They are lined with solid web asbestos facing specially impregnated with a compound that makes the fabric impervious to oil, mud and water.

LEWIS QUALITY

Gland nuts are used on outer end of shaft tube, providing a means of retaining the grease in the axle and doing away entirely with any opportunity for grease to get into the brake construction. Every refinement and point of excellence that should be in the very best axle manufactured will be found in this "Lewis Quality" rear axle.

Lewis Spring and Axle Company

Jackson, Michigan

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1914 Maxwell Announcement

This Ad Is To Dealers Direct

DOUBTLESS you have read our 1914 announcement which appeared in all the big daily newspapers east of the Rockies last Sunday, and will appear in all the large newspapers west of there next Sunday.

Just in passing, might mention that this is only the first of a series of big advertising campaigns. This one cost approximately $30,000, and is just an indication of how we are going to sell the product for our dealers.

That is one of the reasons why 4,000 dealers are going to handle this line—and they will be 4,000 of the best dealers in the United States. The other reason is that the dealer who investigates will find that here is a line he cannot duplicate anywhere else.

You have had experience doubtless with handling lines of cars with various models by the same maker in different priced classes. You know what ordinarily happens. One or two of the models are ready sellers—but there is always one that drags. Always one that the sales manager tells you you must take if you are to get the others.

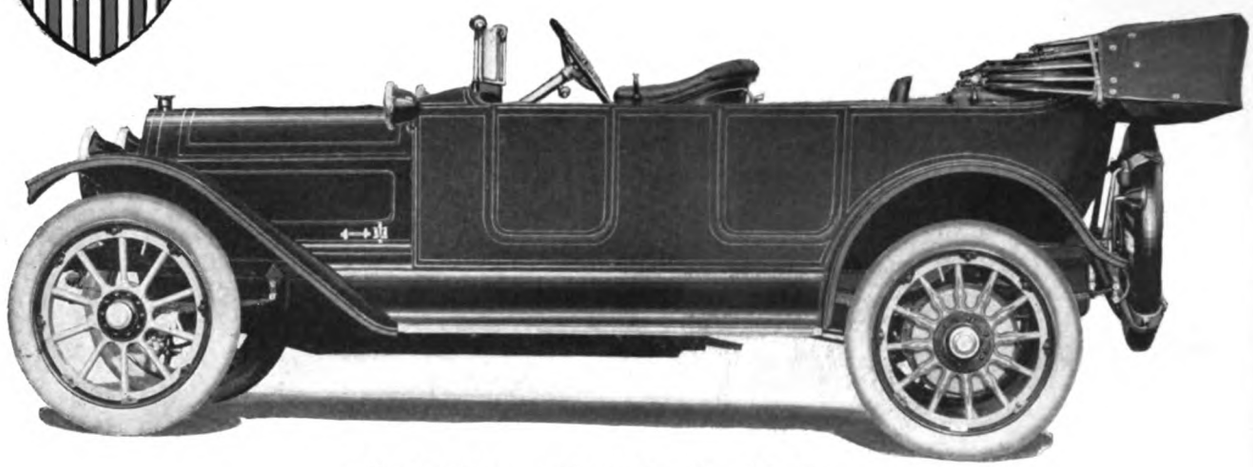
That is what we have in mind when we say that the Maxwell line for 1914 cannot be equalled anywhere else.

Take, for example, the highest priced car in the line—Maxwell "50-6." Ordinarily you would expect the big fellow to be the one that would drag if any did.

We refer you to last season's experience—the season which closed August 1st, and call your attention to the fact that we were the only makers of sixes in this class who had not a car left in his factory on that date.

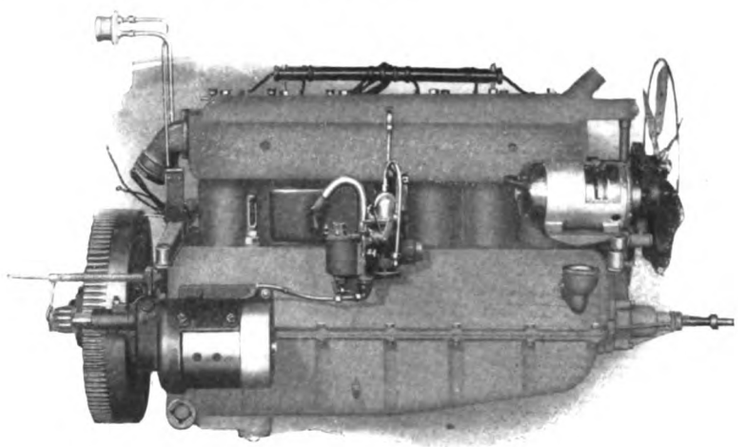
Price last season was $2,350. Without the slightest change—because we did not know how or where to make it better—except to give the buyer his choice of right or left-hand steer—we have made the price of the 1914 model $1,975. This, with Gray & Davis electric starter, full equipment, even to electric cigar lighter in tonneau and finished in every detail so that it puts it up to the maker of a $4,000

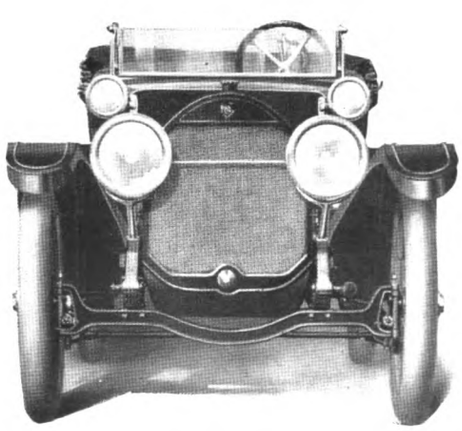
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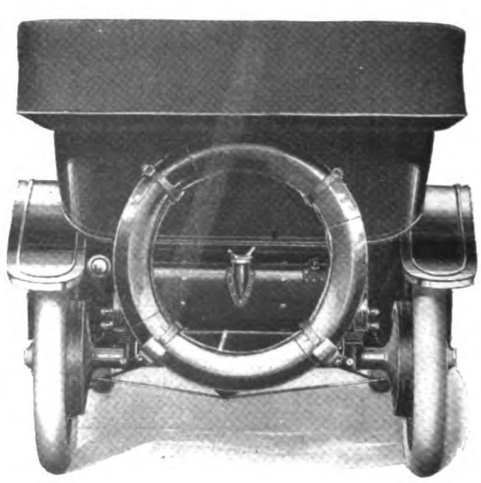


1914 Maxwell "50-6"—$1975

The sweetest running thing on wheels. Six-cylinder motor, bloc-cast, 50 h. p. 130" wheel base; electric starter and lights; Bruce Ott body; 5-7 passengers; disappearing seats; 36" x 4½" tires all 'round. Luxuriously finished, long, easy riding springs and full equipment, including ventilating windshield, top and Jiffy curtains—even an electric cigar lighter. Left or right side drive optional.







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car to prove where he gives the difference in quality.

The six is a flexible proposition from a manufacturing standpoint. That is to say, we can increase or retard the production of a car of this type, so as to make 2,000 or 3,000 or 4,000 or 5,000 or 6,000 of them, according as the demand develops.

With the model "25", for example, this would be impossible. It is a quantity production proposition, and if we are going to make 30,000 of them—as is our plan—we must equip for that many and we must make that many in order to make them at the price. You can understand this even if you are not a manufacturer.

As I have said, the six is a flexible proposition. We enjoyed a splendid demand for the 1913 model at $2,350. We intended to make the price $2,400 for 1914—in fact, we said as much in our ads recently. But you have doubtless noticed there is a red-hot contest on for supremacy in this class of car—it is a rather easy class for smaller manufacturers and assemblers to get into. You have noticed some cut-throat methods of late. It did not touch us because we were sold out.

But looking the situation over, Mr. Flanders said, "We can doubtless sell all the sixes we make at $2,4co. But I do not propose that our sales force shall be engaged in forcing any one model. Every car in the line must sell on its own merits and meet its own competition entirely independent of any other car in the line.

"Now, inasmuch as some folks have started something, I am going to give them a car that is known as the sweetest six on wheels, and at a price they cannot surpass and stay in business. We will just make it $1,975, and we will make it just as good as we can—and see how far the others can follow the pace."

So you see the big car—the big seven-passenger fellow—which will naturally command a lesser demand, and which you would expect to be the tardy one—will probably prove to be the leader of the line.

One thing is certain—you as a dealer can appreciate that the **big beautiful six will give class to the entire Maxwell line. The owner of a Maxwell, no matter of which model, will be proud to say he owns a Maxwell.**

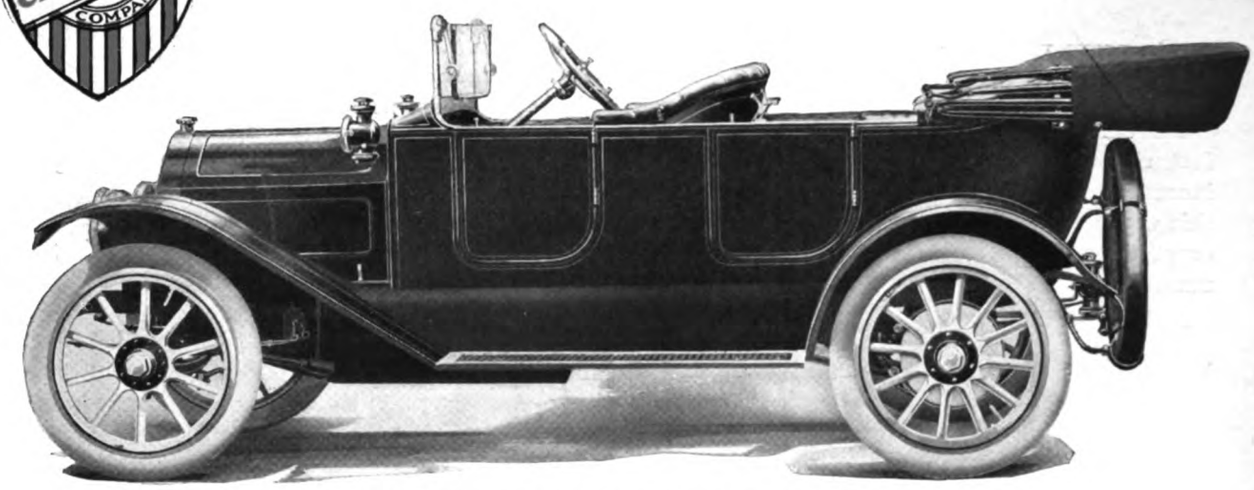
We are not dealing with verbiage nor using superlatives unnecessarily, because we are talking to practical men—to dealers who are accustomed to handing out enthusiasm themselves and who naturally discount everything they hear. But we want to say to you that we believe there is no other six-cylinder motor in any car at any price, that is as well balanced or as sweet running, as this six. With the full floating rear axle which we recently put under this car it is a perfect product—or as nearly perfect as engineering skill and manufacturing care can make it.

By the way, you, as the man who has to stand between the factory and the ultimate user, will appreciate this—if you did not know it before: When we found that the axle under the "50-6" was too light to hold the motor—driving pinion not strong enough, and not enough room in the housing to put in a larger one—we replaced without request, and entirely at our own expense, every rear axle under every "50-6" car that was out.

That is a mighty important point for a dealer to consider. It shows what our policy is going to be in the matter of standing back of our product—no matter which one. What we did for the "50-6" we would do for the "35" or "25" if it became necessary.

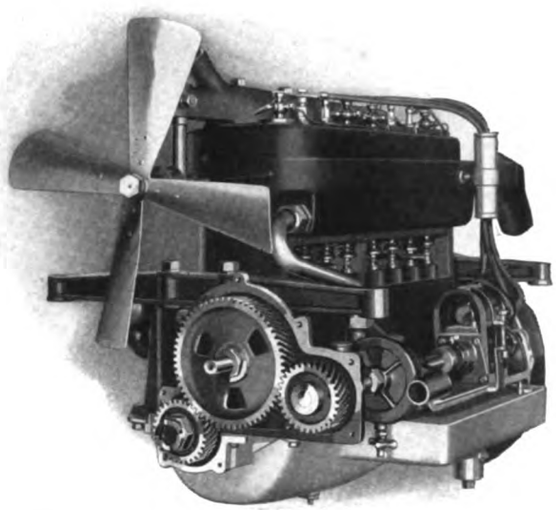
In short, the 4,000 dealers who will handle the Maxwell line for 1914 will know first: That every car in the line will be the leader in its class—will dominate its class because it will be a better car for the same or less money than a buyer can find elsewhere, let him shop until he is black in the face. Second: They will know that the policy back of the $37,000,000.00 concern that makes this product is based on the assumption that if we are to stay in business and become the biggest in the business, we must back up our product to the dealer who passes it on to the buyer.

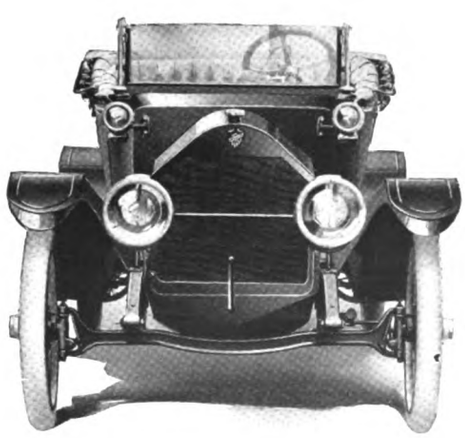
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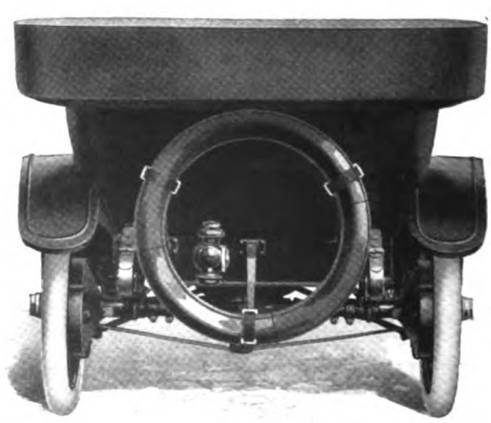


1914 Maxwell "35-4"—$1085—$1225

Powerful, silent, sweet running; bloc-cast 4-cylinder motor; 111" wheel base; 33" x 4" tires all 'round. Left hand drive, center control. Electric starter and lights, at $1225. Three-quarter elliptic springs. Bruce Ott body, ventilating windshield and full equipment, including Jiffy curtains.







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While we will be second largest in the world this year, that does not satisfy us at all. We have got to be first.

Next consider the Model "35". The same wonderful bloc-cast, 4-cylinder motor that was in the Everitt "36"—frankness compels us to admit that there was not much else good in that particular car. But that was not our fault. We did not make it. We acquired that proposition primarily to get two of the greatest motors we have ever known—the "50-6" and the "35-4" motors.

You cannot develop an automobile motor in a day—nor in a year—nor in two years. We have bought that knowledge with hundreds of thousands of dollars and years of experience. So we took these two wonderful motors and we built a car that was as good all the way through as the motors themselves—the Maxwell "35-4" 1914 model which will sell at $1,085 without and $1,225 with, electric self-starter and lights, cannot be equalled anywhere else at the price.

Oh, yes, we know all about it: There are other cars of similar rating, horsepower, wheelbase and all that sort of thing, but we don't need to tell you as a practical dealer, where the difference is. You will lift the hood and find it for yourself. If you don't find it all there, you will take a look inside the transmission case. You will find it in the beautiful body designed by Bruce Ott. Made and trimmed as they do not make and trim bodies in the ordinary $1,200 class. We do not need to tell you the tremendous difference in cost of making a bloc-cast motor such as this, and one with single or twin-cast cylinders.

We do not need to tell you. You know.

To let you into a little secret, our engineers started some months ago to re-design this motor so as to take $150 out of the making and bring it down in price so as to compete with other cars that, looked at superficially, might be considered competitors—cars that being made cheaper, can afford to be sold cheaper. There was a riot when our dealers heard of this. Our Sales Manager joined in with them and soon became the ringleader. All protested against the slightest change in this splendid motor. And Mr. Flanders agreed.

Every man who has handled this car or sold it knows that such a motor is vastly more expensive to make—but it's worth it because when it is once made it is made for keeps. There is almost no limit to the life of a well-designed, well-proportioned bloc-cast motor. Being machined as a unit, everything has to be in line—and crank-case and cylinders being cast in a unit everything has to stay in line. So you see we have another dominating car in our "35" model.

We won't have to ask you to take a few cars of this model in order to get the other—the customer who wants a car in the $1,200 class will, after looking them all over, insist on this one—and you will simply supply his demand.

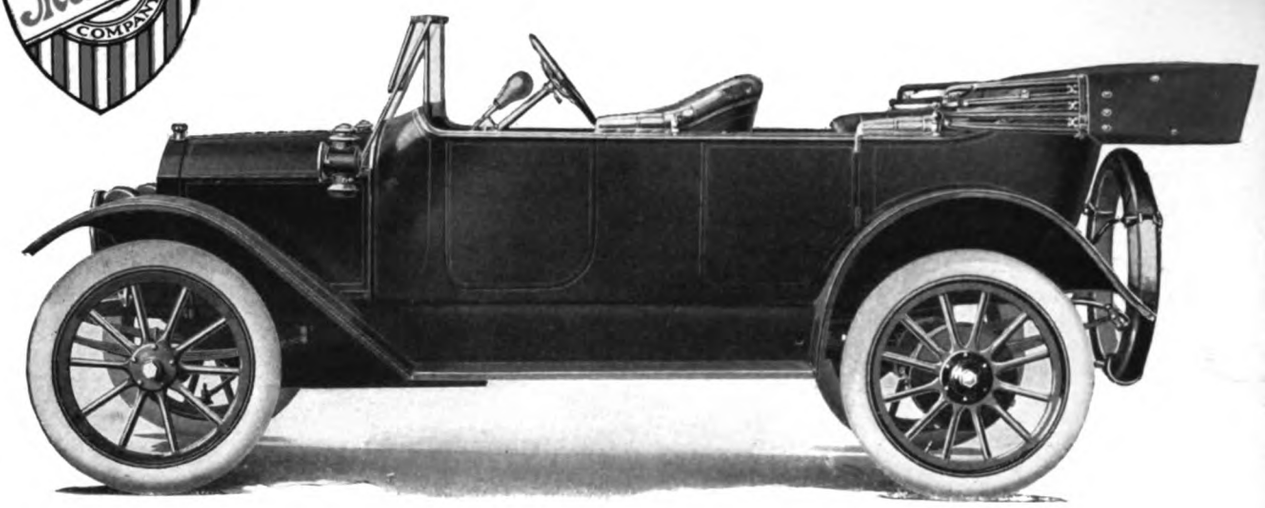
And now the wonderful Maxwell "25"—the car you have all been looking for, hoping for, and wondering why some big manufacturer did not make.

Much as you know about this business, you probably did not know that the first requisite was manufacturing facilities and millions of dollars capital. On top of that, it involves the greatest engineering feat known to the industry.

Why, it's child's play to design a $5,000 automobile. If you doubt it just look back over the past and recall the hundreds of $5,000 cars you have known. They came and went, mostly because the demand for such a car was too little—and you have doubtless noticed it is getting less and less every day.

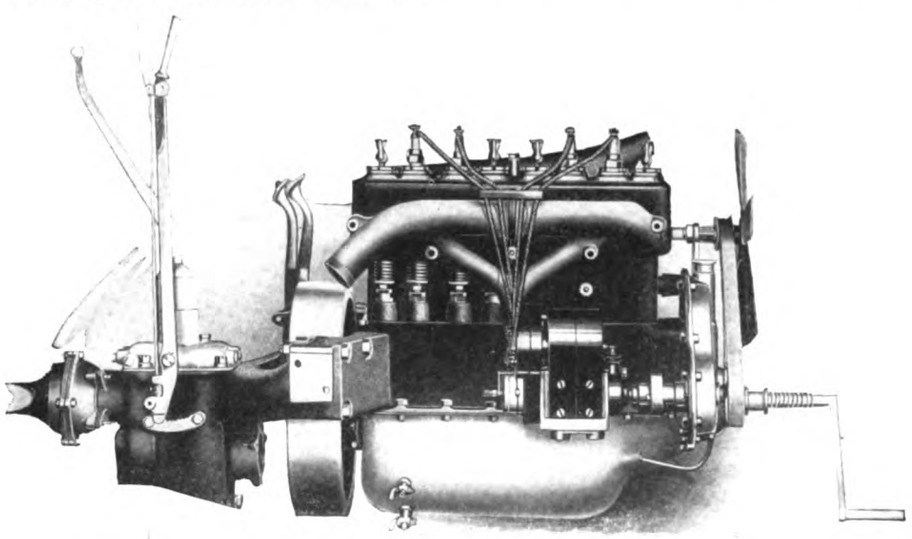
Cars like the Maxwell "50-6" at $1,975 put a crimp in that kind of proposition. The maker of a $5,000 car is on the defensive today. It's up to him to prove he has a better car. Most of them have given up trying to prove it—and built a smaller car. But they still try to get a high price for a former reputation. There's going to be some real fireworks along that line during the next few months—just watch the Maxwell "50-6."

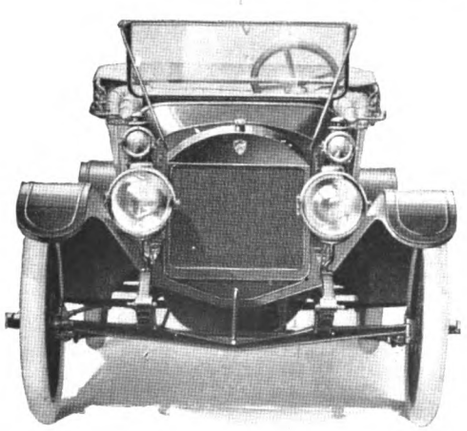
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1914 Maxwell "25-4"—$750

The year's sensation. Four-cylinder, bloc cast; 25 h. p. motor; magneto; weight 1600 pounds; 103" wheel base; 30" x 3½" tires all 'round; 3 speed selective transmission; full five-passenger body designed by Bruce Ott; complete equipment, including tire holders, ventilating windshield; top, Jiffy curtains.







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But we were talking about the "25". Funny how we will get discussing one of these models and slop over on to one of the others. You see we are very enthusiastic about the whole line—each one is King in its own Principality.

We were saying it was child's play to design a $5,000 car—do you know that there is only one maker in the world who has ever been able to make a good cheap car?

No, we're not advertising the other fellow—we are just telling the truth.

We did not start out to make that kind of a car. You have told us—thousands of dealers have told us—that there were hundreds of thousands of people who were willing to pay a little more for a car that was a lot better.

A real automobile, in which the people in the tonneau did not have to rest their chin on their knees.

One that a six-foot man could drive himself without having to make a chauffeur of his four-foot-eight son.

It's funny, but seems as if more big men buy more low-priced cars than any other price, so we figured that the seats had to be standard size, to fit the buyer.

On top of that it had to have power plus—because you know a car like this is criticized more rigidly than a $5,000 car. To the buyer of a $5,000 car the deal is an incident in the day's work. To the man who buys a car like the Maxwell "25" at $750, it is a mighty important matter. He not only must consider first cost, but to a still greater extent, must he consider maintenance cost afterward. "Design for that quality as the first consideration," said President Flanders to our engineers.

Such a car must be light, and it must be strong. It must withstand anything it runs up against.

Consequently it must be made of the best materials the science of metallurgy knows how to put into it.

And finally, it has to have style and finish—because you know we are building this car for a class of buyer who, like the average American, detests a uniform and refuses to wear one even if it does cost less than regular clothes.

That's the kind of car we have made in the Maxwell "25"—and we won't have to insist on your taking a carload of these in order to get a six or a "35." You will want this car on its own merits, too.

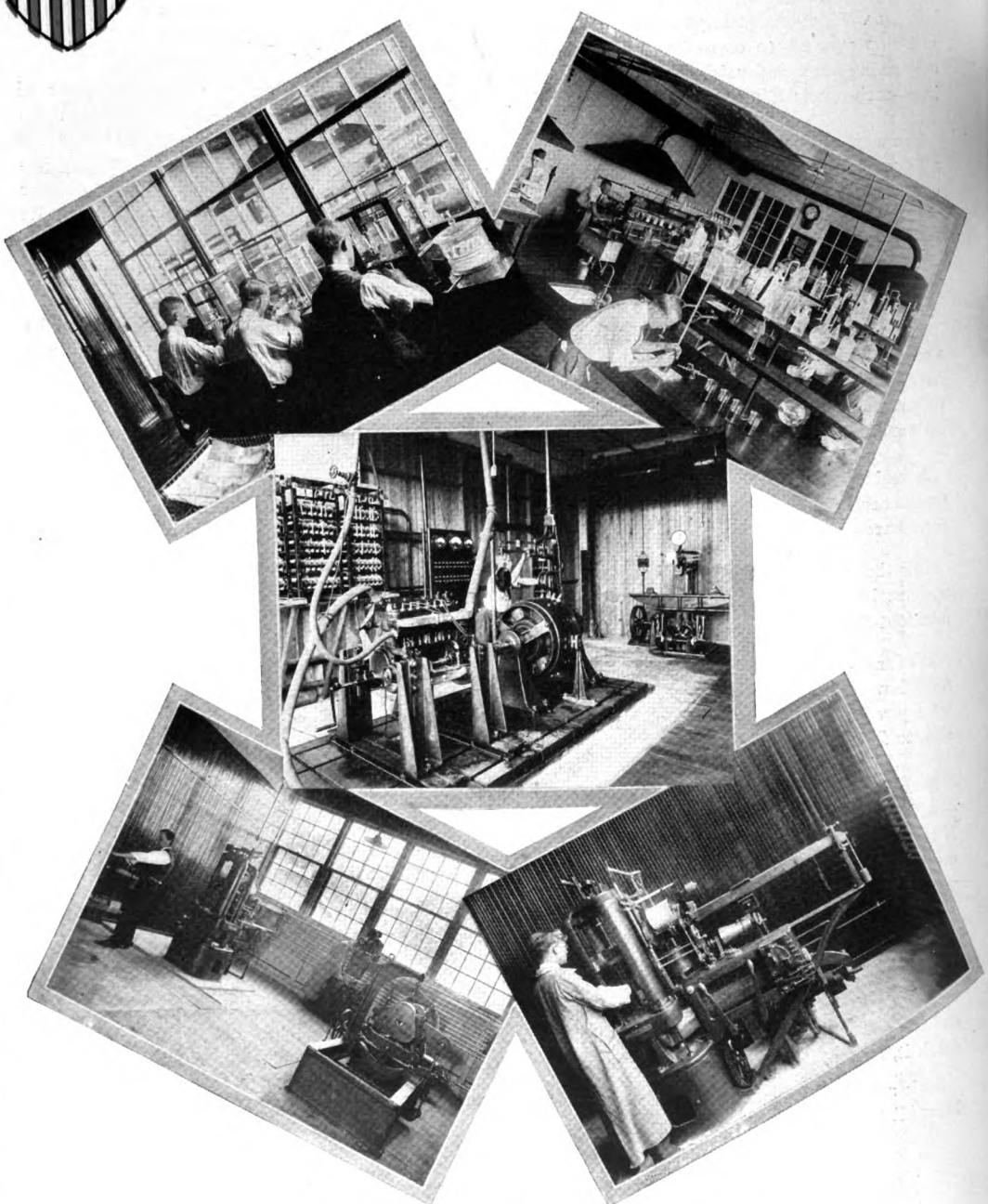
Now, just a word more: We cannot hope to supply the full demand for any of these models—with the possible exception of the "50-6", which, as we stated above, is a flexible proposition. If the demand runs above 6,000 of these, however, we cannot supply them. We are laying out our plants for 500 cars a day of the model "25"—but it will be 18 months before we reach that point.

During the next twelve months we will, however, make 30,000 of the Model "25"; 12,000 of the Model "35" and 2,000, or as many more as you want up to 6,000 of the "50-6". That makes us second largest in the world—but that doesn't satisfy us. We've got to be first. There is only one way to do that—make better cars at the same or lower prices—and—stand back of the product and the dealer. That's the only way we know and, again, we refer you to our policy, not as we speak it, but as we proved it in our acts in regard to the Maxwell "50-6".

Such a policy once known gives every dealer confidence and enthusiasm. Well, that is the Maxwell Company's policy.

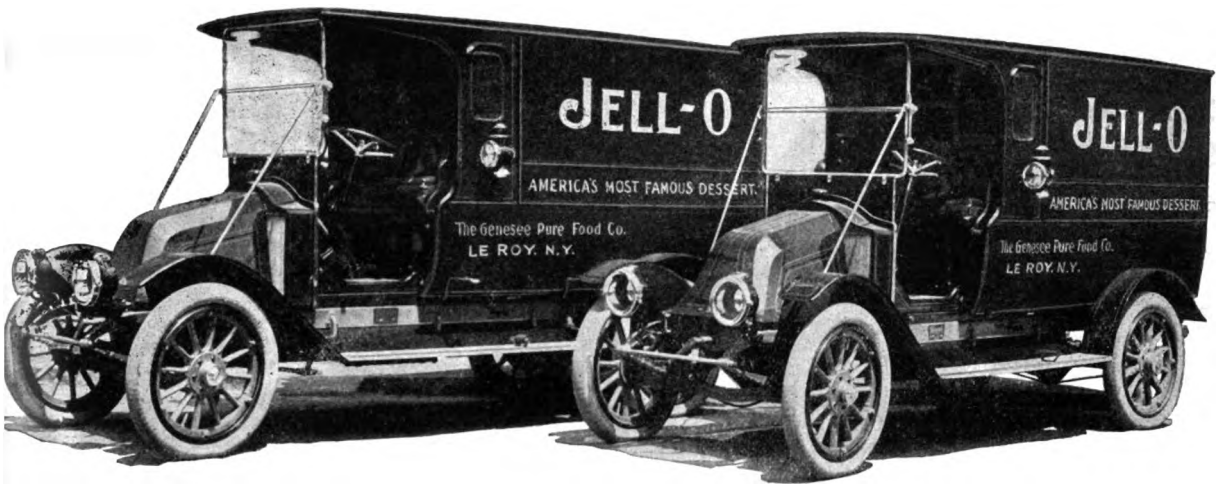
MAXWELL MOTOR COMPANY, Incorporated
DETROIT, U. S. A.

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Some views in the Maxwell Laboratory, where we specify, analyze and test every piece of material that goes into any Maxwell Car.

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$1500 Stewart Delivery Trucks $1500

NEW PRICES

Effective August 1st the Chassis Price of Stewart Delivery Trucks will be reduced from $1650 to $1500

Increased output and reduction of manufacturing osts make possible this reduction in price of Stewart elivery cars. A year's successful manufacturing has hown us where we could cut down "overhead" and ıcrease our production without added expense. The avings thus made we are passing on to our customers.

The reduced price, however, means no reduction in he quality of the Stewart cars, either in material or orkmanship. We will continue the same high-grade onstruction—as evidenced by our use of such standrd parts as these:

Continental Motor, 30 H. P., 3 3-4 in, bore x 5 1-4 in. stroke
Timken Axles, front and rear
Brown and Lipe selective transmission
Multiple disc clutch
Bosch magneto
Gemmer steering gears

A number of improvements have been added, such s foot accelerator, dash adjustment for the carburetor, nd other refinements making for convenience and conomy.

Proved by a Year's Use

No radical changes have been made in the Stewart ucks, because a year's hard use in 60 cities in 42 different lines of trade has shown that radical changes are unnecessary. Stewart trucks have proven this. They have made good—both for customers and for dealers.

The Wise Dealer's Foresight is The Poor Dealer's Hindsight

The success of Stewart trucks in the hands of our dealers has already proved the wisdom of those dealers who took on the line at the beginning. Every Stewart sold is a moving salesman, helping to bring in more orders. There is still good territory open, however. There is still **opportunity** for prudent dealers to take on this **profitable line.** Selling Stewart cars is an all-the-year-'round business. No seasons; no trading; no heavy expense for entertainment and joy rides—just a plain business proposition to present to sensible business men.

The reduction in price widens the **already large market** for Stewart trucks. Now is the time to look into this money-making proposition. Write or wire for details.

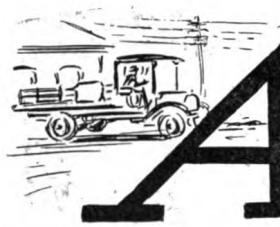
Stewart Motor Corporation, Buffalo, N. Y.
Please send literature and dealership proposition.
Name.....
State.....
City.....
Street.....

STEWART MOTOR CORPORATION, Buffalo, N. Y.

. R. LIPPARD, Pres. and Mgr. R. G. STEWART, V.-Pres. and Chief Eng. R. P. LENTZ, Sec. and Treas.

Separate and Distinct from any other truck company using our name or the names of our officers

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THE ATTERBURY LINE

Why is the Atterbury Line of Trucks—all sizes from the 1,500 pound delivery car to the heavy duty 5 ton truck—the best line for truck dealers to handle?

Atterbury Trucks are built as they are, not because factory experimenting has so dictated, but because we have watched and studied the performance of hundreds of Atterbury Trucks in actual use in the ten years' time they have been on the market.

Sometimes a year's use of a truck will show where it could be bettered. Some other detail of construction may not develop the need of being changed for three or four years. It is safe to say, however, that ten years time will bring out the worth or fallacy of every last detail of truck construction.

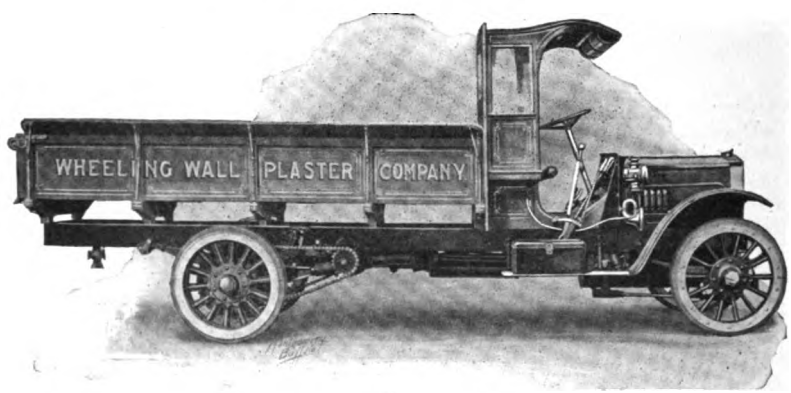
Certain parts must be changed and more radical improvements made in them than in others. One of the first and most important things to adjust is the relation of motor sizes to loads. Our experience has proved that the adjustment of motor sizes to loads is by far more practical than the practice of using the same size motors for varying loads, and compensate for greater loads by increasing engine speed. The former method leaves a margin for increased efficiency as may be required by grades, road conditions or overloads. This margin of efficiency adds to a motor's life without increasing its fuel consumption. The latter way does not.

Radius rods are, perhaps, next in importance. Atterbury radius rod construction provides for two way shocks and are acknowledged to be most practical.

Many other details of "hitch-up" have been improved consistently, thus adding to the efficiency of Atterbury Standards.

These are some ideas the prospective dealer should take into consideration before deciding upon an agency.

You—Mr. Dealer—will have to show your customer and back up what you show him. With the Atterbury Line you can show him how efficiency is obtained and can point to specific and practical reasons why such construction means the efficiency he wants.

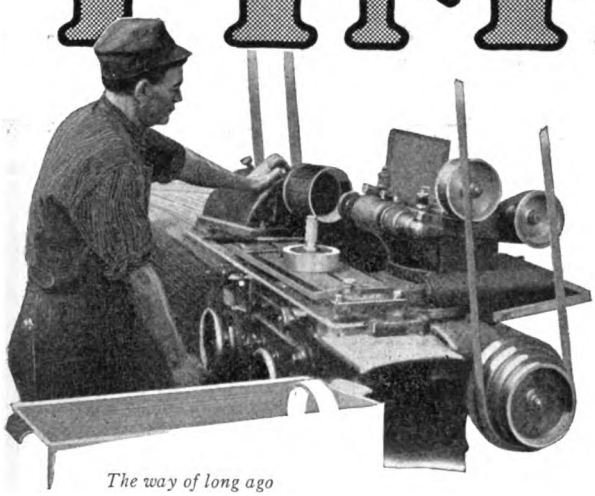


ATTERBURY MOTOR CAR COMPANY

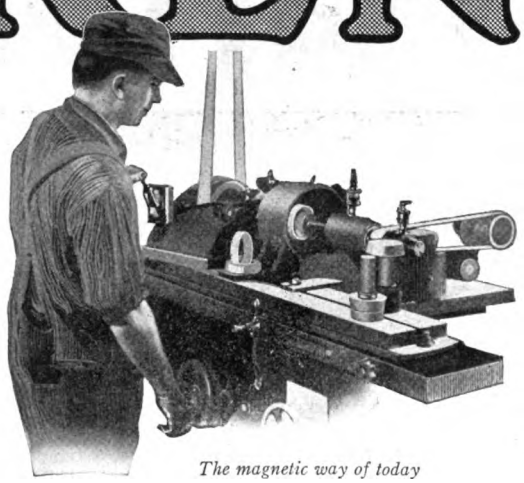
Buffalo **New York**

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TIMKEN



The way of long ago



The magnetic way of today

In the Grip of the Magnetic Chuck

YEARS ago it was Timken practice to put the heat-treated, hardened steel cup for the Timken Bearing in a chuck that held it firmly at only three points. Then grind a round tapered hole in the center.

But pressure at three points did distort the cup a little bit. When that pressure was released the cup would spring back and the hole would no longer be ***exactly*** round.

Then a chuck made of heavy springs was used. Springs of equal force pressed over the whole outside surface of the cup. A great advance over three point suspension in a chuck.

Nearly all the cups now came through round. Nearly all! But Timken shop men have mighty little use for that word *nearly*.

Trouble was that some of the cups were very slightly out of round when they came from the hardening room. The chuck springs were forced out a little farther at the high points, not quite so far at the low points.

So the springs pressed a trifle harder on some parts of the cup than on others. After release the hole would be very very nearly, but not quite, round.

And this is how *nearly* was eliminated:—

We stopped grasping the cup by its outside surface. Just ground the back flat and put it up against a strong flat magnet.

That magnet now is the chuck that holds the cup firmly while it whirls and the swift revolving emery wheel grinds the round tapered hole.

There is no rim pressure on the cup. So the round hole stays round when it's taken off the magnetic chuck.

This is just one of a hundred stories that tell how the efforts of a great organization are bent day by day toward perfection of the Timken Bearing. The bearing whose unique principles of design made it 'the one bearing against the field' for motor-car use long before present day accuracy was attained.

THE TIMKEN ROLLER BEARING CO.

Canton, Ohio, U. S. A.

Every Timken Bearing, large or small, is of just one Timken Quality, through and through

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Hartford CONE CLUTCHES

A CAR with a standard motor, transmission and rear axle may sometimes handle and perform somewhat better than another with the same main elements.

We are are accustomed to speak of the first car as having a better hitch-up. A car's clutch is one of the most important elements in the parts which constitute a car's hitch-up. In these days of standardized cars it behooves manufacturers to look to the hitch-up elements for therein may lie the turning point of a car's success.

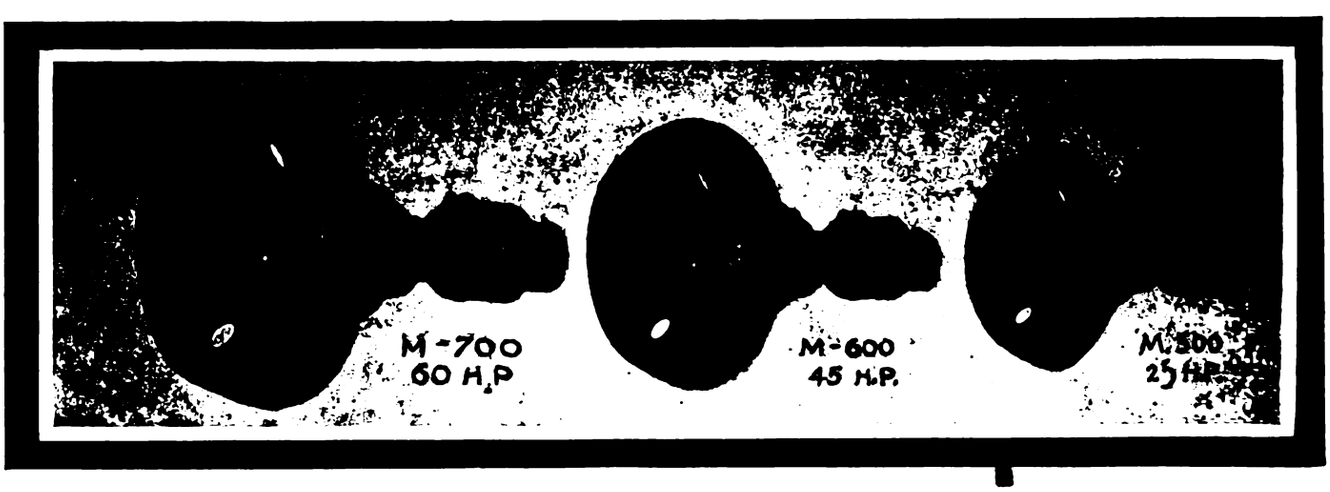
Hartford Cone Clutches will improve the hitch-up of any car. They have done so for many American made cars, some high priced, many medium and several of the low priced variety. There is only one quality of Hartford Cone Clutch, however—the best; the best as to material ,workmanship and design.

The fact that the several low and medium priced cars using Hartford Cone Clutches have equally as good clutches as the high priced cars is no reflection on the high priced cars. It is, rather, an insurance to the high grade car owners that they have the best clutch that can be built.

Manufacturers of medium and low priced cars, knowing well the importance of an efficient hitch-up have invariably sought the best among types and adaptations of clutches.

Their search has generally ended with the adoption of Hartford Cone Clutches. We said "generally"; we mean always, because we have never lost a customer and are constantly adding to our list.

Hartford Auto Parts Company
HARTFORD, CONN.



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He who buys a car that has under its hood a

BUDA MOTOR

knows that he will never meet a car (even a $5,000 one) with a BETTER motor.

("There aint no such animile")

The day of the annual revolution in motor design, *the day of experiment*, is past, and everybody knows it. Most modern motors are "good" and the cry of today is for refinement of design and manufacture, "*get-at-ability*," *strength* and *quality of parts*—in a word, for a motor that is "right" and (above all) STAYS "right."

Common sense tells you that to get these qualities at a moderate price *absolutely requires* first, long experience in motor building *as a specialty*, and next, a very large and efficient *organization*, with the *resources* and the *equipment* to back it up.

The Buda Company, one of the pioneers of the business, and *the first in America to make motors on the "cast-in-block"* plan, has ALL these things, and that is why the saying is TRUE that the Buda Motor IS

"The Part That Sells the Car"

THE BUDA COMPANY

FACTORY, HARVEY, ILL., (Chicago Suburb)

Address all correspondence to our **FACTORY REPRESENTATIVES**

BRANDENBURG & COMPANY

1108 S. MICHIGAN AVE., CHICAGO 57TH & BROADWAY, NEW YORK FORD BLDG., DETROIT

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The popularity of some of the low-priced cars is based on the lasting security of the bolted-up parts.

Absence of rattle and noise makes a powerful appeal to the ears of the buyer—and a record for "standing up" is the best re-sale argument.

It is our experience that manufacturers of very large volume have, as a rule, paid closer and keener attention to bolted-up security. Perhaps this is one of the reasons for their success.

Now that it is positively known that looseness and squeaks can be overcome by the use of spring lock washers of pre-determined efficiency, manufacturers of automobiles are generally becoming more insistent on the three essential points of a successful nutlock washer—

PROPER SECTION
PROPER ANALYSIS
PROPER HEAT TREATMENT

If you are in doubt—write.

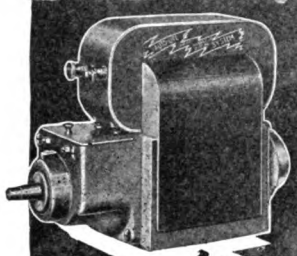
THE NATIONAL LOCK WASHER COMPANY

CHICAGO, ILL.——————NEWARK, N. J.

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"AS SURE AS THE WHIRL OF THE WORLD"

THE BIRTH OF A BETTER LIGHT



Built with magneto dimensions - designed to be connected direct to magneto or pump shaft - operates at 6 volts - begins to generate at 200 revolutions per minute - attains maximum output at car speed of 17½ miles per hour.

AUTO-LITE ELECTRIC STARTING and LIGHTING SYSTEM

The AUTO-LITE Electric Generator - a simple, positive, convenient source of current for motor car electric lighting.

THE Auto-Lite Electric Generator—a simple, positive, convenient source of current for motor car electric lighting.

Built with magneto dimensions—designed to be connected direct to the magneto or pump shaft—operates at 6 volts—begins to generate at 200 revolutions per minute—attains its maximum output at car speed or 17½ miles per hour.

Your 1914 car should carry the Auto-Lite system as standard equipment—no matter what price you pay.

Due to its already wide-spread adoption, car manufacturers can equip with the Auto-Lite if you so specify.

For the manufacturer who desires lighting, starting and ignition in one system or separate units, we are able to provide the best recognized equipment now in use.

The Electric Auto-Lite Company
116 Michigan Street, Toledo, Ohio
BRANCHES: New York, Detroit, Kansas City, San Francisco

Get This Book

Send for our "Handbook on the Care and Operation of Automobile Electric Systems," a book so full of interesting information on all modern electric systems that no automobile owner can afford to be without it.

Explains in detail, functions of the various parts—how to locate and remedy troubles of all kinds—embraces all electrical automobile systems.

The large operation chart which it contains is alone worth the price.

Regular price 50c.

Will be sent to you for 10c. in stamps if you use this coupon.

THIS COUPON SAVES YOU 40c.

The Electric Auto-Lite Co., Toledo, Ohio.
116 Michigan Street.
Enclosed find 10c. in stamps for which please send me your handbook.
Name.....
Address.....

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Where Have Your Profits Gone?

By C. P. HENDERSON



FOR years—almost since the inception of the automobile industry—I've hunted the secret of your profit-*loss*. It's not because you don't sell enough cars. It isn't because of the profit per car. It isn't because your establishment is too expensive. But it is because at the very height of the heavy buying season you don't get *cars of the year ahead.*

Your prospects hold off for 1914—those who do buy, buy discount cars—the precious selling weather slips by—winter is on before your 1914 deliveries commence. And then people are *not* buying.

That's where your profits go!

HENDERSON

You Should be Selling 1914 Cars Today

Today you should be offering your market 1914 cars. For the leaders next year will supply carburetors that will burn kerosene or gasoline—thus cutting the year's fuel cost down 75 per cent.

Also wire wheels, cowl dash, cowl gasoline tank, left drive, the new center seat control, dust-proof en bloc motors with oversize cooling and, of course, electric, self-cranking and lighting systems.

But you cannot offer them under any other name than Henderson until the precious selling weather has disappeared *with your profits.*

Popular Models for Every Class of Trade

For we are a year ahead with our car. We anticipated the demand—we came out early with 1914 models. Since May 20th we have been shipping—our dealers get their maximum profits.

And the models, too, are the ideal to sell. There is the Light Four, at $1585—ideal country and city business; the De Luxe Four, for city business and some country trade; the Six for large city trade; the coupe for the large city business.

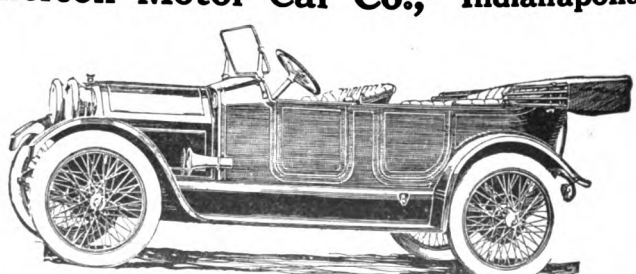
Is not this a wonderfully balanced line? And remember, we supply it at the time *when buying is heaviest!* When biggest profits are possible.

Dealers tell us, because we know their conditions, that we are destined to be leaders in the moderate-priced class.

If what we have said interests you and you are the type of man we like, wire us about territory—or come to the factory if you can. May we hear from you quickly?

The New Henderson Six, Touring and Roadster Models, $2285.

Henderson Motor Car Co., Indianapolis, Ind.



New Henderson De Luxe, $1785

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Jeffery-Dewitt SPARK PLUGS in the Making

Scene II. Affixing the lettering, preparatory to a second baking of the porcelain. Few people realize the intricate processes and ceaseless care necessary to make the world's leading Spark Plug—the *J-D*. Yet every plug must pass through 52 operations and three departments. The process pictured above also gives opportunity to reject all porcelains that have developed a defect during the first firing—nothing but a perfect porcelain can find its way into a *J-D* product.



At 75 cents, the PETTICOAT plug possesses the famous unbreakable Jeffery-Dewitt porcelain, the accurate metal parts, and the patented packing joint. The electrode is of special alloy. For good, hard, efficient service, this plug is especially recommended. It can also be had in conical type; and both conical and petticoat types may be had with platinum points, at $1.25.

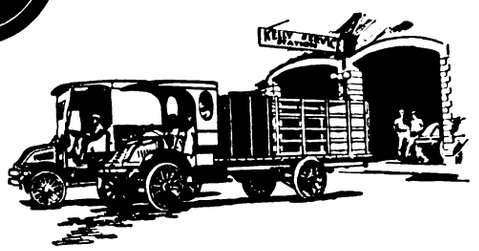
JD
JEFFERY-DEWITT CO.
DETROIT, MICH.

It is but one of a complete line—all of which are described in our free literature.

JEFFERY-DEWITT COMPANY

65 Butler Avenue, Detroit, U. S. A.

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An Invincible Combination

Kelly Trucks
Backed by
Kelly Service

This is the greatest combination in the motor truck field.

Kelly Trucks are built just right.

Their design is the result of seven years of uninterrupted observation of the natural evolution of the successful commercial car.

They are the last word in motor trucks.

That's why Kelly Trucks will do your hauling *just a little better.*

Kelly Service insures 100% truck efficiency. Our interest in a truck does not stop with its sale.

You are interested! Write us!

Dealers!

There is still some desirable Kelly territory open. Write us for our agency proposition.

The Kelly-Springfield Motor Truck Company

1037 Burt Street Springfield, Ohio

(54)

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Springfield Metal Bodies

Springfield Metal Bodies are perfect in design, material and workmanship. They are made in a factory of magnitude—well equipped with the most modern machinery, much of it especially devised for the manufacture of metal bodies.

Ten years' experience in the making of metal bodies justifies the claim that these products are far in advance of competitive effort. That these bodies are used on practically all the high-grade cars in this country is proof that may not be disputed.

Springfield Metal Bodies are made in aluminum or steel, including the highest grade limousine, landaulet and town car closed bodies, and touring car bodies in all forms, torpedo, runabout, baby tonneau, etc.

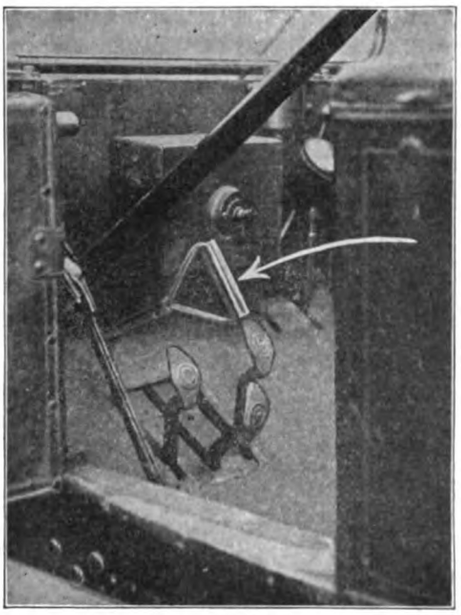
The trade will be interested in information which will be sent upon request.

SPRINGFIELD METAL BODY CO.
Springfield, Mass.



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STOP!---SAVE MONEY



$9.00--FORD ENGINE STARTER--$9.00

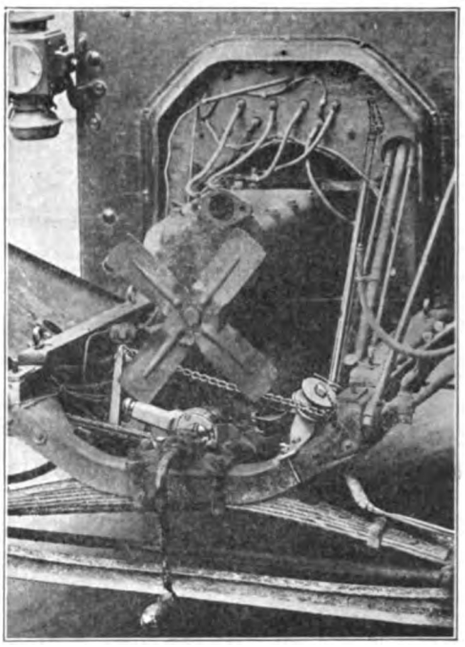
"It is out of sight," under the hood. All that shows is a small hand lever on dash. You do not have to leave your seat to start your FORD MOTOR when equipped with same.

All that is necessary is to pull the lever. Will POSITIVELY TURN YOUR MOTOR OVER EVERY TIME. With this starter YOU HAVE TWO STARTING DEVICES. YOU DO NOT HAVE TO REMOVE THE CRANK. **IT STAYS ON.**

FOR THE NEXT 60 DAYS TO THOROUGHLY INTRODUCE OUR STARTER WE WILL MAKE THE ABOVE PRICE.

NO MORE BROKEN ARMS. BACK KICKS ARE DANGEROUS.

DIRECT ON RECEIPT OF PRICE.



$9.00---ORDER TODAY---$9.00

Bremer-Wilson Manufacturing Co.
1421 Michigan Ave., Chicago, Ill.

INTERLOCKS



Stop Your Tire Trouble

Don't fail to write today for Interlock Booklet which tells all about Interlock Inner Tires, and gives many new tire pointers of the greatest value to every automobile owner.

The Interlock is an **extra inside tire** which is placed between the outer casing and the inner tube for the purpose of so strengthening the tire that it will be proof against blow-outs, rim cuts and punctures and therefore last twice as long.

When you know what Interlocks will do, you will want them. They give you practically **two tires on each wheel** with no change in the looks of the tire. With this combined strength you can run your car an entire season without delays, annoyance or tire trouble, and save about half your tire expense.

In writing for catalog, please give name of your local dealer, and if he cannot supply you with Interlocks, we will send you the name of a nearby dealer who can.

To Dealers: A good proof of the efficiency of Interlocks is that they are regularly stocked in all sizes by the largest jobbers who only handle quality goods, such as Beckley-Ralston Co., Chicago; Bi-Motor Equipment Co., and Iver Johnson, Boston; Fry & McGill Co., Denver; Motor & Machinist Co., Kansas City; Chanslor & Lyons, Los Angeles; Western Auto Specialty Co., Iowa City; Ia.; Gibson Automobile Co., Indianapolis and all leading automobile supply houses.

We Want Live Dealers Everywhere

Write for our proposition and give the name of your jobber.

DOUBLE FABRIC TIRE CO.
640 9th Street Auburn, Ind.

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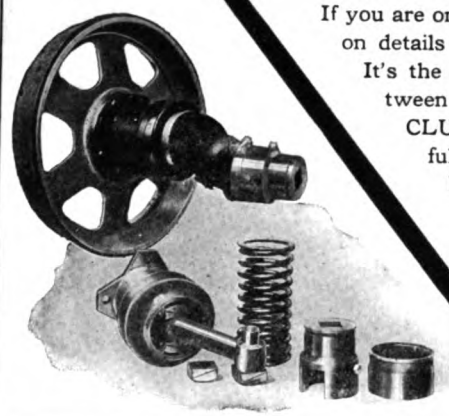
KONIGSLOW CLEVELAND

can solve your clutch problem

If you are one of those concerns who are rather keen on details you know that the CLUTCH talks. It's the most frequent point of contact between driver and car. KONIGSLOW'S CLUTCHES will speak as forcefully for you as they do for KONIGSLOW.

Don't wait till you are ready to place orders---write today to

KONIGSLOW CLEVELAND

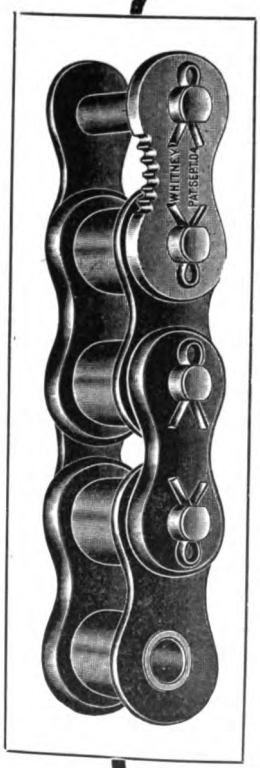


For
Clutches
Clutch Rocker Shafts
Control Levers
Universal Joints

see

Detroit Office
J. H. GOULD
1202 Majestic Bldg.

KONIGSLOW CLEVELAND



"WHITNEY" Chains

WE call your attention here to "Whitney" Cotter Detachable Chains as the most practical chains ever offered for motor vehicles. They have made a record for themselves which no other Detachable Type has approached.

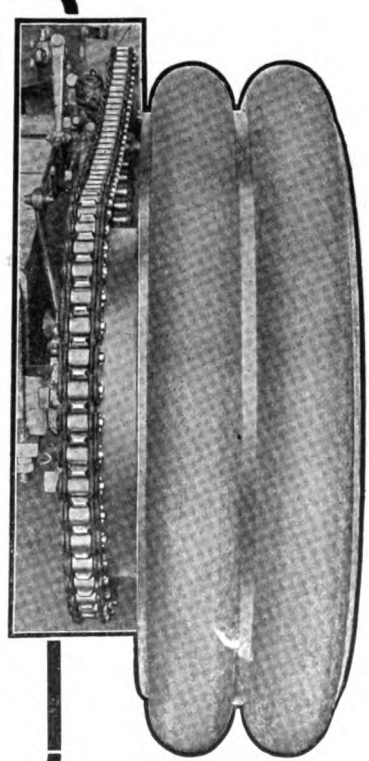
This Cotter Pin feature is so practical and necessary that it calls for little detailed explanation. The illustrations tell their own story, proving that this form of construction is logical and necessary for chain equipped motor vehicles. This Cotter Detachable Chain can be taken apart at any link and lengthened, shortened or repaired without the use of any special tool, as the Cotter Pin can be removed with pliers, screw driver or any sharp pointed instrument. The use of "Whitney" Cotter Detachable Chains assures the builder, owner and driver of commercial vehicles uninterrupted service on account of the ease of repair.

"Whitney" Chains are made from steel best adapted for the purpose, carefully hardened and calculated to resist the most wear, while in the matters of machining and assembling the utmost care is exercised and thorough inspections and tests characterize each process of manufacture. Their future service, however, depends upon the accuracy of sprockets, care, lubrication, alignment and adjustment, for the best chain in existence cannot withstand the evil influence of improper conditions and give best results.

Write for our illustrated catalog which shows top and side views of each size of all Roller chains manufactured by us.

"Whitney" Chains Are Built for Strains

THE WHITNEY MFG. CO.
HARTFORD, CONN.



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The A. L. A. M. Formula for determining Horse Power rating gives only a scant idea of the efficiency of Ergon Standard Motors.

Model	Bore	Stroke
C	3¾	4½
CX	4	4½
D	4⅜	6

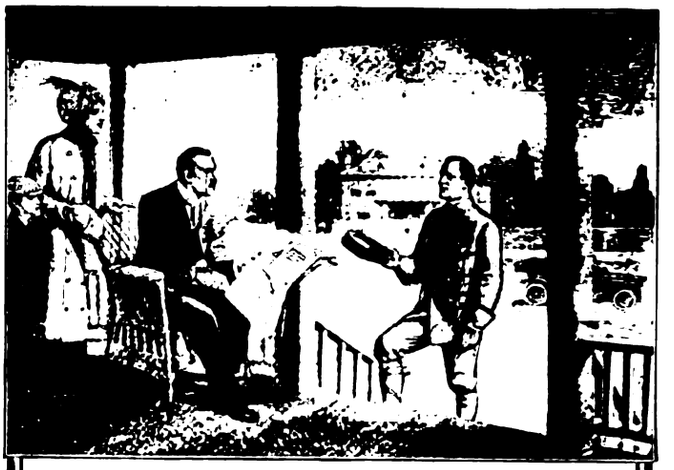
Brake tests show to a remarkable degree the benefit of the Ergon tendency toward a long stroke motor.

For heavy duty truck practice no better motor than the Ergon Model D has ever been produced. In Model D motor the replacement of gears by Renold Silent Chain for magneto, pump and timing drive is a decided improvement, giving less wear on parts and in eliminating all vibration.

Ergon Motors can be had either as independent or unit power plants. Write us for blue prints, specifications and records of dynamometer tests. Their flexibility makes Ergon Motors applicable for a wide range of truck power plant requirements.

Hazard Motor Manufacturing Company

ROCHESTER, N. Y.



Get Weed Tire Chains at Once!

"I know you are a careful driver, but it is best to adopt every device to ***prevent*** accidents.

"I can't afford to take ***any chances.*** We have all foolishly depended on rubber alone long enough. It's time to awake to our responsibility. So go at once and buy a complete equipment of ***Weed Chains*** and never start out without them when the roads or pavements are slippery or greasy."

Weed Anti-Skid Chains

Insure Against Anxious Moments



Probably no other device has done so much to raise the factor of automobile safety as WEED CHAINS. They are the proverbial "ounce of prevention" against skidding, the cause of over ninety per cent of all automobile accidents—***Life Insurance*** and ***Accident Insurance Companies*** strongly endorse them and recommend their use. ***Taxicab Companies,*** for their own protection, ***insist*** that their drivers put them on when the streets are wet or slippery.

Increasing Demand

for WEED CHAINS makes them the ***most profitable*** Automobile Accessory handled by Dealers—Quick and Steady Sales—No Dull Seasons—No Dead Stock—Easily Handled—Liberal Profits—Universal Satisfaction.

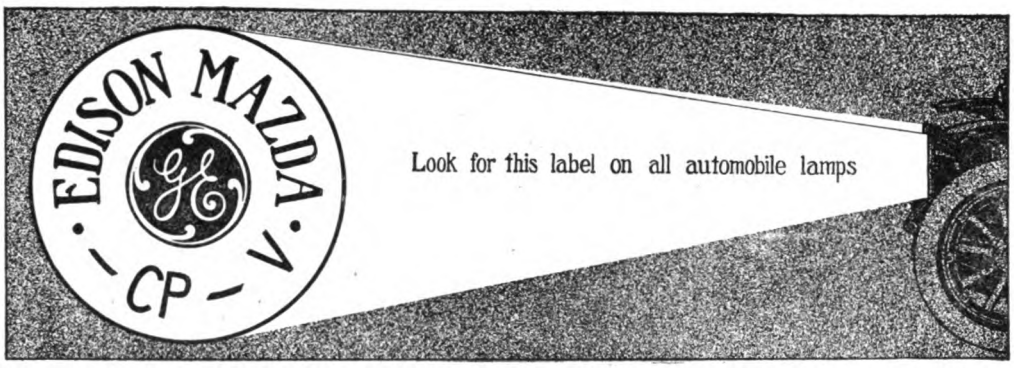
Attractive, convincing, decorative, lithographed hangers supplied to dealers upon request.

At all dealers selling Auto Supplies

Weed Chain Tire Grip Co.
New York

Manufactured in Canada by
Dominion Chain Co., Limited
Head Office: Shaughnessy Bldg., Montreal, Can.

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Look for This Label

Cars that are electrically lighted are "good" cars, the cars with reputations. Nearly all are equipped with **Edison** Mazdas—adopted as standard.

This label is not only the guarantee of continued, successful operation of automobile lamps, but of service also.

Behind this label is the largest manufacturer of incandescent lamps in the world.

Back of this label is the pioneer in the development of incandescent lamps for automobiles.

This label and its trade mark stands back of our engineers, who, co-operating closely with makers of electric lighting systems and automobile builders, have produced the most satisfactory and efficient lamp for automobile service—the Edison Mazda.

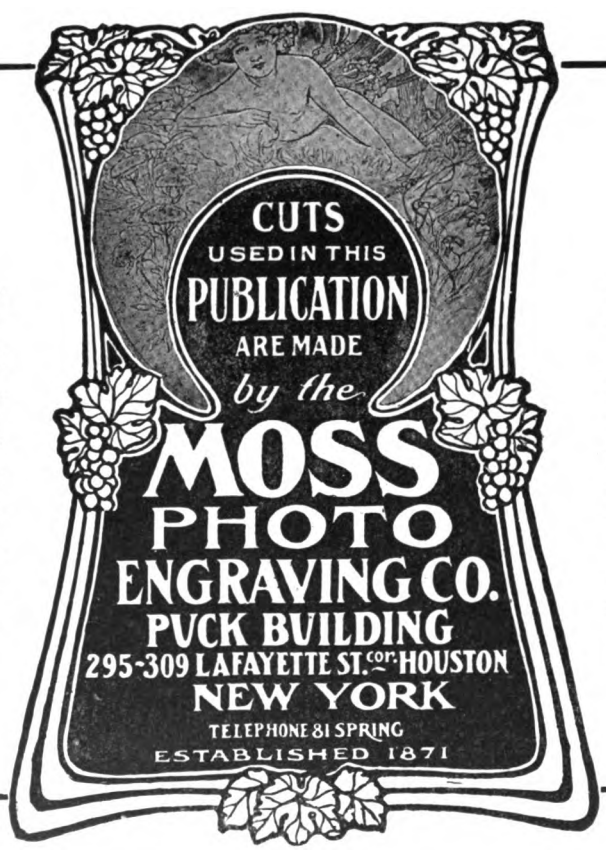
Electrical dealers, automobile supply houses and garages form a chain of Service Stations where Edison Mazda Lamps for renewals may be readily obtained.

General Electric Company

Edison Lamp Dept. **HARRISON, N. J.**

Lamp Agencies Everywhere

(4212)



OUR REPUTATION

is based on the fact that we have been handling the engraving of several prominent trade and general publications for years to the utmost satisfaction of both publishers and advertisers

SERVICE

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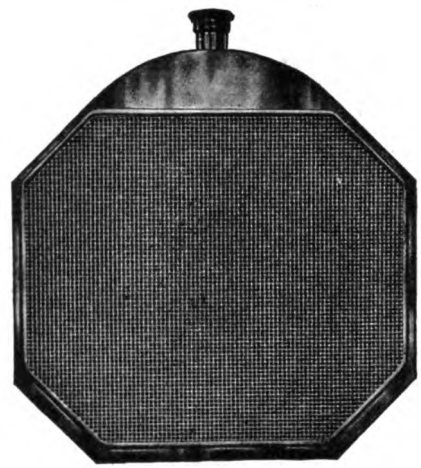
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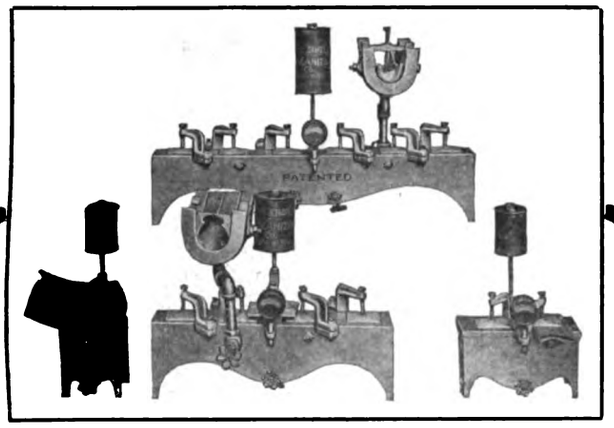
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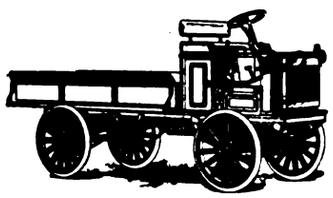
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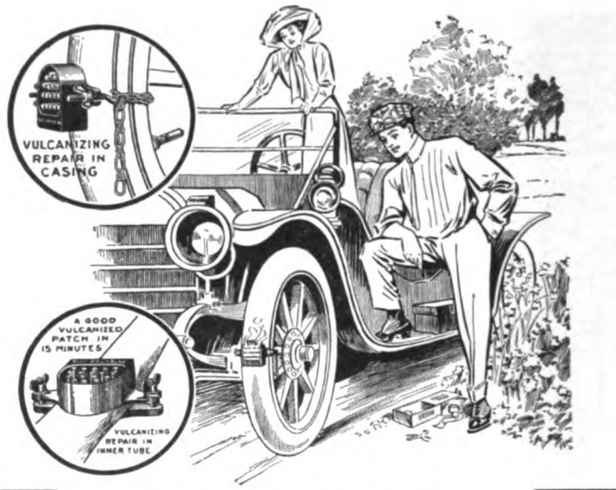
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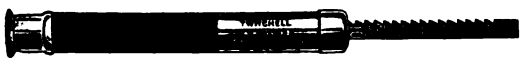
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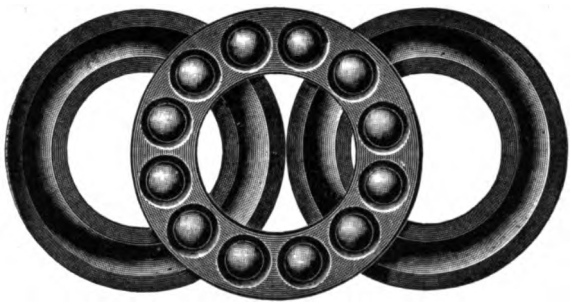
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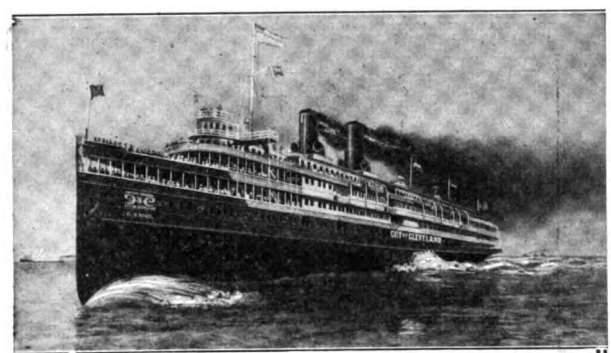
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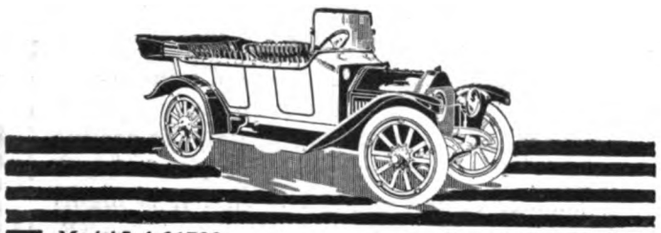
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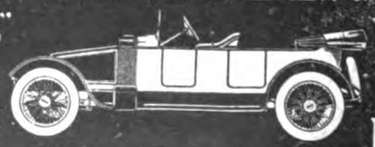
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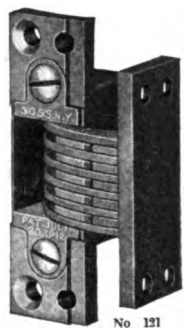
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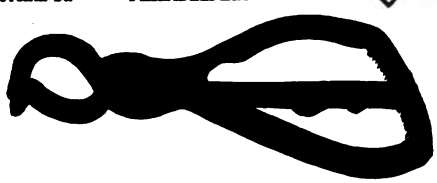
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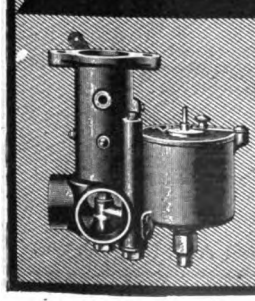
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Our agency will be a big money maker for 1914

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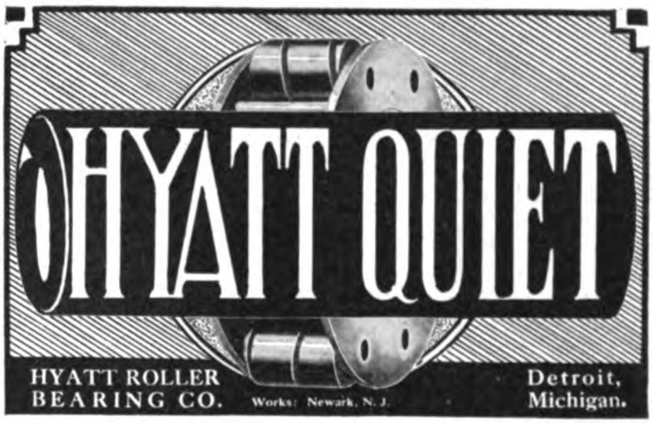
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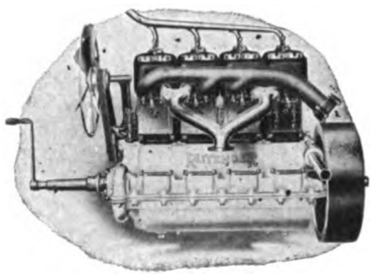
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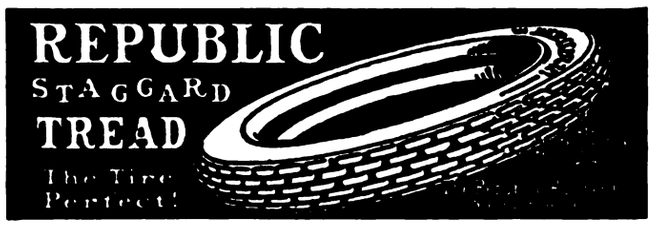
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METZ "22" ROADSTER $475

The "gearless car"—no clutch to slip, no gears to strip—completely equipped, fully guaranteed. 4-cylinder, 22½ H.P. water-cooled motor, Bosch magneto, artillery wheels, best quality clincher tires. Makes 5 to 50 miles per hour, 28 to 32 miles on 1 gallon of gasoline. Great hill climber. You can secure EXCLUSIVE SALE in your territory. Write for Book "B."

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For anything in sheet metal that goes onto an automobile ask the

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DETROIT, MICHIGAN
Largest Users of Sheet Metal in the World

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Making Their Mark Everywhere
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will help you increase your business while benefitting your customers. We will send any responsible dealer a pair on 30 days' trial. Write now. Good Agents wanted for unoccupied territory.

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The Motorist's Self Vulcanizer

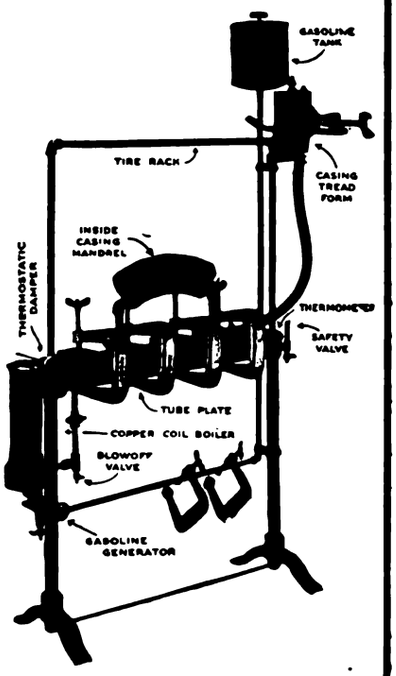
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Complete Steam Vulcanizing Plant—$45

Get that extra 80 per cent. that you have been paying to some fellow who has had foresight enough to install a vulcanizer. If he can afford to maintain a plant and **split the profits,** how in Sam Hill can you afford not to do your own vulcanizing?

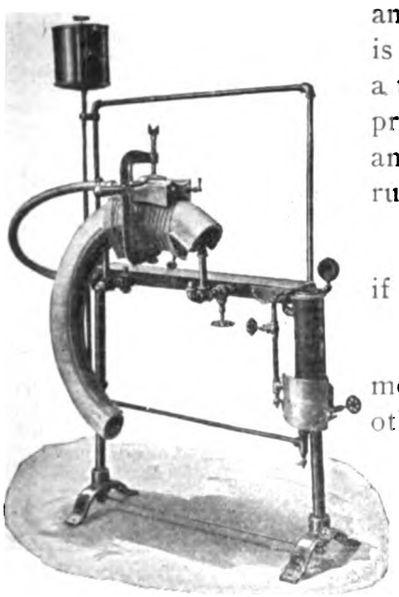
A school boy can turn out enough work with the Shaler Steam Garage Vulcanizer to pay for it in a week or two. Not a get-rich-quick proposition, but a practical, simple vulcanizer that will handle your work and let you in on the most profitable part of the automobile business.



The Ideal Garage Outfit

Will do every kind of vulcanizing that you want to handle, tube punctures—or large casing blow-outs. Steam is raised in twenty minutes in a copper coil boiler, so the machine can be profitably heated even if only a single tube repair is to be made. Gasoline or gas used for fuel. A gallon of gasoline will run the whole outfit all day long.

It's a SHALER Vulcanizer



and has the exclusive Shaler feature of a temperature control that is automatic. No watching or regulating. Start the burner and a thermostat automatically adjusts the flame and keeps the steam pressure exactly right for vulcanizing. As a check on this mechanism a safety valve relieves the pressure should it accidentally run above the vulcanizing point.

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Casings are repaired by the approved Shaler wrapped tread method, which makes stronger repairs at less expense than any other way, and requires no extra moulds for different sized tires.

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15 cents per line of six words, cash with order: — In capitals, 25 cents per line —

A market place where Dealers, Jobbers and Manufacturers may buy, sell or trade used cars, parts and appliances and where help or situations may be secured at a nominal cost.

EXPERIENCED, practical superintendent for tire and rubber goods factory. One-half of controlling interest, if wanted. State full particulars and expected salary in first letter. STENS MFG. CO., Ludlow, Mass.

SALESMAN with wide acquaintance among automobile manufacturers desires representation for good line of accessories or parts. Actively engaged now and dealing with best manufacturers. E. B. D., care Motor World, 1001 Ford Bldg., Detroit, Michigan.

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FOR SALE—One 1913 Fiat, 6 cylinder, 7 passenger touring car, fully equipped. Brand new, $4,500. C. L. WHITING, Rochester, N. Y.

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Vulcorine is guaranteed to prevent punctures up to the size of a thirty penny spike nail. Vulcorine increases the life of your inner tube 25 to 50 per cent. Vulcorine does not affect the guarantee of any tire manufactured. Price $7.50 to $10.00 per car. There is come good territory open.

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Do you want to buy, sell or exchange an automobile? If so, write.
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FOR SALE—Interest in well established garage and sales agency. Fine location. Doing good business. Address A. J. K., care Motor World.

BROKEN CRANKSHAFTS, cylinders, crankcases, flywheels, gear teeth, pistons, perfectly welded and machined ready to replace. Guaranteed and references. Machinery up to 5 tons welded. ATLAS WELDING WORKS, 74-76-78 Irving St., Rahway, N. J.

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THE Boston starter for Ford automobiles, starts from the dash, practical and cheap. $25.00 installed. J. VERNER ANDERSON, 715 Conn. Mutual Bldg., Hartford, Conn.

ARE YOU in need of any additional help in any department of your business? Are you out of employment or looking for a better connection? Have you second-hand apparatus of any kind or do you want to buy second-hand material? Have you a factory site for sale or do you want to buy one? If so, use the Want and For Sale column of the Motor World. Seven words to the line, fifteen cents a line. Advertisements can be inserted over a number when it is desired and identity of the advertiser will be kept confidential.

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New Model B uses successfully half and half mixture lowest grades kerosene and gasolene. Satisfaction guaranteed or money refunded. Greatly increased power, very slow speed on high. Starts easy at zero. Special agents' prices. Dept. MW, THE AIR-FRICTION CARBURETOR CO., Dayton, Ohio.

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For leather seats and cushions. Dries hard on clean leather. The color does not come off. Renews the finish. Ask your dealer.
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Famous for Their Durability

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JENCICK MOTORS For Motor Trucks

from base to spark plug, have features that are "Different and Better."

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This name on Automobile Tires and Rubber Accessories signifies inherent qualities of material and workmanship that insure the maximum of service at the minimum of expense. (673)
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PERFECTION SPRING COMPANY

Specialists in **Spring Suspension** High Grade Only

CLEVELAND, OHIO

HESS AXLES

Now standard on fourteen makes of America's leading cars and still growing. Send for blue-prints and specifications—or consult our engineering department.

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OF EVERY DESCRIPTION

Samples and Prices on Request

L. J. MUTTY COMPANY, Boston



MOTZ Cushion Tires

For Pleasure Cars and Light Delivery Cars

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A—Shows *double*, notched treads.
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The Motz Tire and Rubber Co.
Executive Office: Akron, Ohio
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THE BUSH MANUFACTURING CO.
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25% to 50% more mileage

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Special features that eliminate speedometer troubles. Send for the booklet.

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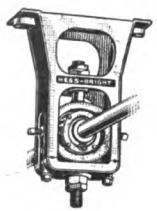
THE SIMMS MAGNETO CO. 1790 Broadway, New York City Factory, Bloomfield, N. J.

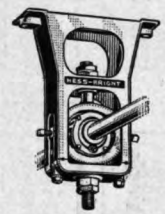
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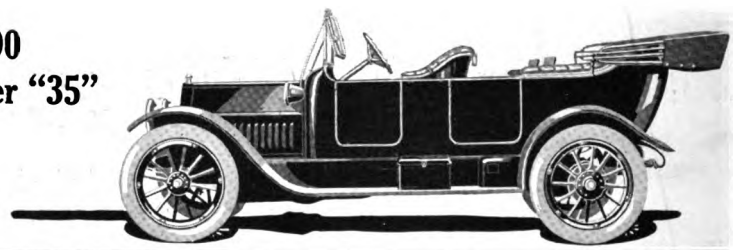
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Studebaker "35"



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Studebaker dealers have been attracted to The Studebaker Corporation and the Studebaker cars because of the splendid reputation of the Studebaker name, and because of the splendid quality of the goods which has built up this reputation.

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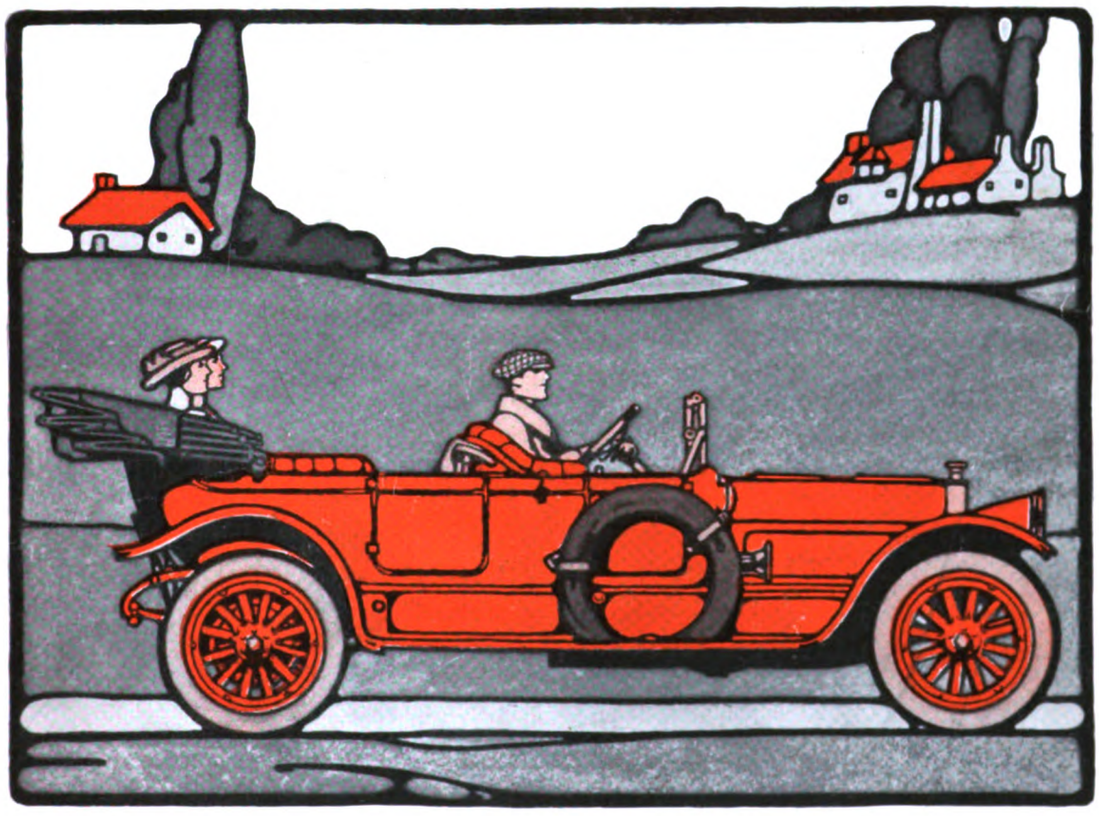
MOTOR WORLD

A Trade Paper Giving the World's Motor News

Vol. XXXVI
No. 8

New York, August 14, 1913

Ten cents a copy
Two dollars a year



NO matter what you pay for an Automobile, unless you buy with it a service that lasts as long as the car lasts, you have not made a good investment. In each city where

THE PIERCE-ARROW CARS

are sold there is a complete establishment for rendering those cars every attention they may need.

THE PIERCE-ARROW MOTOR CAR CO., BUFFALO, NEW YORK

Published Weekly by the Motor World Publishing Company, 1600 Broadway, New York

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Any Manufacturer Can Test The Hartford Starter Without Redesigning His Car

With most electric starters the car manufacturer is beset with the difficulty of altering his car's design to try them out.

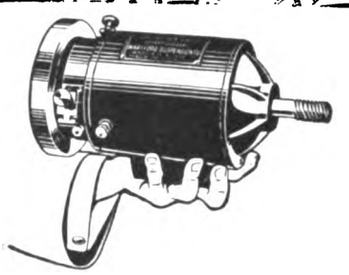
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Consequently the demand of manufacturers, designers and engineers is for a starter that is of proven efficiency, yet of extreme light weight.

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No manufacturer is asked to take these claims for granted.

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Every Buyer Should Specify the Hartford Starter for His New Car

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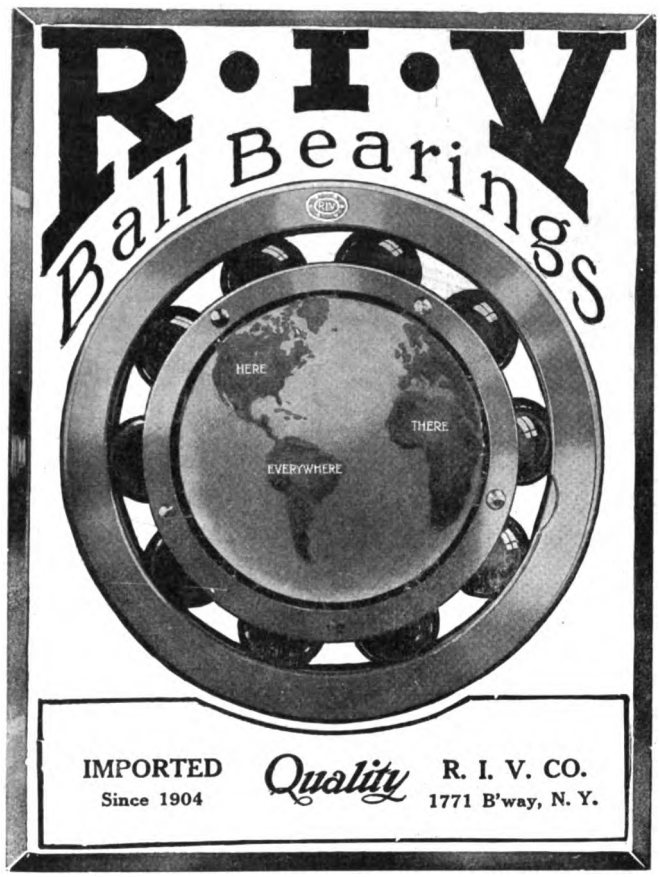
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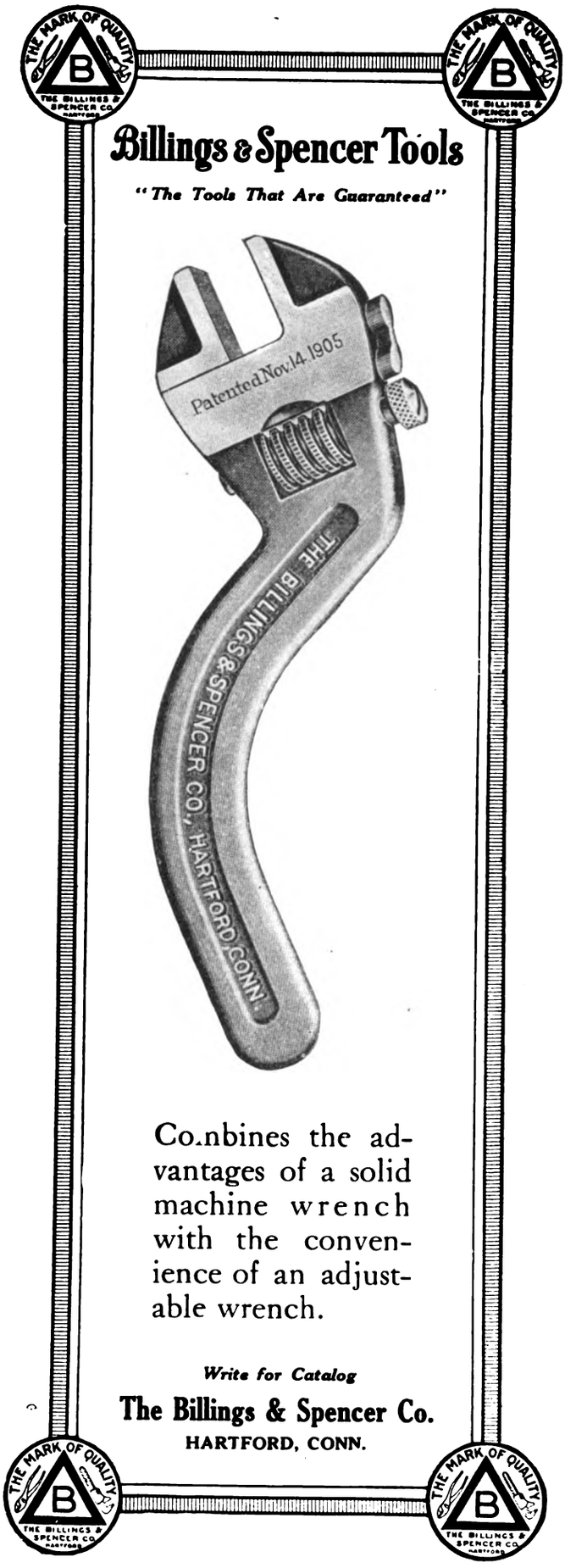


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In high-grade cars almost invariably will be found R. I. V. Ball Bearings. Experienced motorists know this.

If the ball bearings are right they conclude other details in the car are of the same standard. It is the dealer's interest therefore to point out that his cars are equipped with Quality Bearings. ***R. I. V. Quality Ball Bearings will help sell your cars.***

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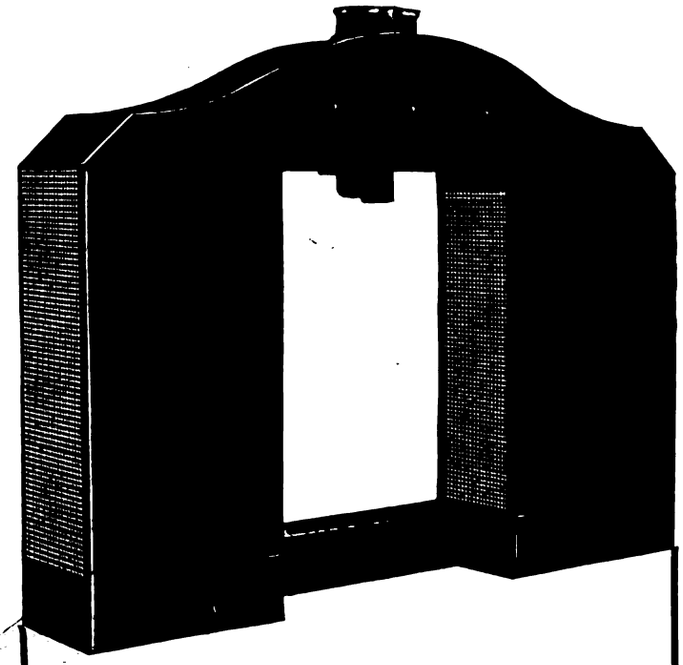
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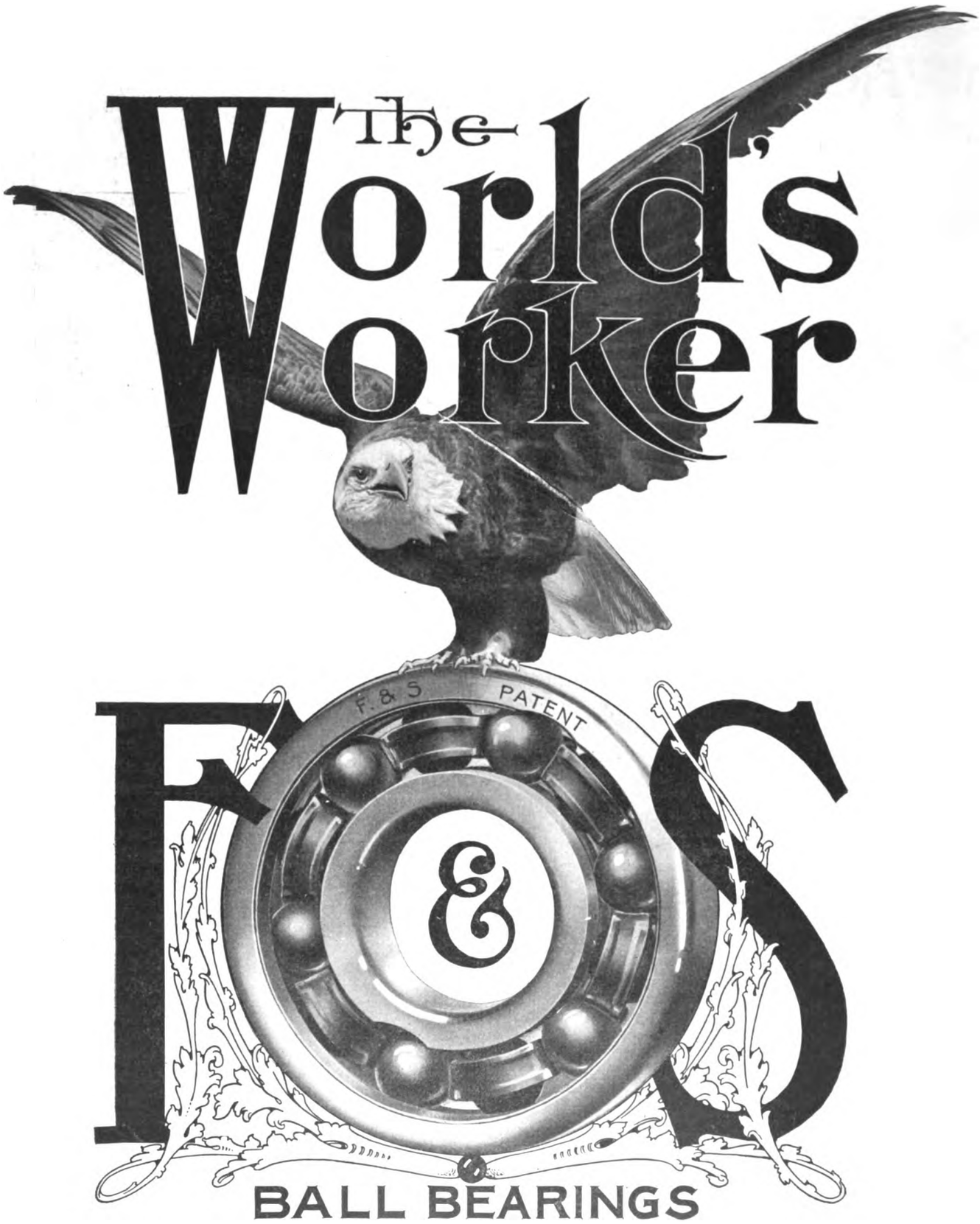
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NEVER in the history of the automobile industry has a car manufacturer built his own radiators successfully. Radiator building is a specialty in itself. Radiator design, however, is a joint problem for the automobile engineer and the radiator maker. The engineers' problems of engine cooling detail concern circulation methods, weight, shape, style, etc., while the radiator maker's experience can best determine materials and methods of construction. Co-operation between the two is the safest and sanest way to get at the best cooling system for certain cars which require something outside of radiator standards.

For years Fedders Radiators have been used on the highest grade cars and probably for years to come many cars will find Fedders Radiators all that they can ask for in a radiator, but to anticipate a tendency on the part of many engineers, we are always ready to co-operate with them, and to that end have gotten our manufacturing facilities in shape to take care of all kinds of special requirements. Why not avail yourself of our experience?

THE FEDDERS MFG. WORKS
BUFFALO, N. Y.

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MOTOR WORLD

Vol. XXXVI New York, U. S. A., Thursday, August 14, 1913 No. 8

TRUCKS TO HAVE NO PLACE AT NEXT AUTOMOBILE SHOWS

Pleasure Cars Only to be Shown in Palace and Coliseum — January Dates for Both Exhibitions— More Space in Palace.

There will be no trucks or commercial vehicles of any sort at either of the forthcoming National shows in New York and Chicago. Although several months since it was decided to eliminate "truck week," as the second week of the shows had come to be termed, there were those who believed that commercial vehicles would be permitted to mingle with the pleasure cars. This belief, however, is put to rout by the official statement issued this week that both the New York and Chicago exhibitions will be devoted wholly to the display of pleasure cars.

The dates for the two shows also were made public. The New York exhibit, which will be staged wholly in Grand Central Palace, will open January 3rd and close January 10th. The one in Chicago will occupy the Coliseum and First Regiment Armory, as formerly, and will open January 24th and terminate on the 31st. It will be the first time that both of them are under the management of the same organization, the merging of the N. A. A. M. and the Automobile Board of Trade into the Automobile Chamber of Commerce rendering this possible. There also will be but one double-admission day at both shows, instead of two days as heretofore, which is to say that the 50-cent fee will prevail except on the single $1 day.

In Grand Central Palace four floors will be utilized, affording 50,000 square feet more floor space than was used at both the Palace and Garden last January, a fact that will surprise most of those not intimately familiar with both buildings.

Automobiles will occupy the first and second floors of the Palace, and all of the wall spaces of the other floors. The space about the wall on the second floor and other sections on the same floor which may be needed for the purpose will be devoted to a special section for the exhibition of electric cars. On the third floor, the spaces not occupied by car exhibits, will be given to the products of the Motor and Accessory Manufacturers, Inc., who also will have 15,000 feet of the fourth floor. The M. A. M. will make the allotment of spaces to its members as has been the custom in the past. It is expected, also, that the Motorcycle Manufacturers' Association will show their products on the fourth floor. Space can be had also on this floor for accessory makers and jobbers who are not members of any organization.

For the Chicago show the gallery of the Coliseum will be extended at the sides and each end of the building will be lengthened by 24 feet, this arrangement adding 5,000 more feet of space for the exhibits. The aisles will extend around the inside of the balcony instead of the outside, as heretofore, so that the exhibition space will be given greater depth. There will be also a slight rearrangement of the main floor. Three-fourths of the center of the main floor of the armory will be devoted to the exhibition of electrics.

S. A. Miles, general manager of the Automobile Chamber of Commerce, is busily engaged on the plans for both exhibitions and expects that application blanks and diagrams will be issued on or about September 1st.

Indianans to Market Marathon Output.

To market the entire output of the Marathon Motor Works, of Nashville, Tenn., the Herff-Brooks Corporation has been organized in Indianapolis, with a capital of $100,000. Its officers are Jacob Herff, president; Herbert Herff, vice-president; George Herff, treasurer; H. H. Brooks, secretary. The Herffs previously constituted the State Auto Co., which handled the Marathon car in that city, while Brooks was sales manager of the Marathon works.

MICHIGAN FAILURE REVEALS WONDERFUL FINANCE SYSTEM

Receiver Discovers Weird Method of Handling Dealers' Notes—"Bills Payable" not Included in Statements to Banks.

It is believed by some of those who are delving into its affairs that the Michigan Buggy Co., of Kalamazoo, owner of the Michigan Motor Car Co., which went into the hands of a receiver last week, as reported by Motor World, can be saved. They admit, however, that saving it will not be a simple matter, as the receiver's probe has uncovered what at best may be described as a much mixed state of affairs.

The mix-up is of such a character that it is not possible to arrive at anything suggestive of an authentic statement of assets and liabilities. Meanwhile, however, the receiver, the Detroit Trust Co., has placed W. F. McGuire, former production head of the Maxwell Motor Co., in charge of the Michigan plant, and as it contains material sufficient to build about 500 cars, McGuire will perform that task as quickly as possible.

Victor F. Palmer, secretary and manager of the company, has been sick abed for several weeks and at last reports was still confined to his home, but there are those who blame him for the trouble and who do not mince words in doing so. The actual owners of the property, Frank B. Lay and his son, F. B. Jr., have the confidence of most of the community, and it is said that they are more to be pitied than censured.

The methods of financing the needs of the Michigan company are said to have been if not distinctly original then not common to a very large portion of the automobile trade. When it was desired to borrow money from the banks, for instance, the necessary statements of financial condition were rendered but, strange to say, few, if any, of them ever carried the item "Bills

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Payable." In fact, it is stated that such bills, most of them for material, were not entered on the books at all, but were simply carried in files. As a result, the statements rendered the banks were always of a pleasing nature.

Dealers' paper also was negotiated on an extensive scale. "Bills Receivable," which are listed as an asset, amount to $1,288,000, or which $860,000 is represented by dealers' notes, one dealer alone having given paper in the sum of $300,000. This sort of security was not only invited but freely made use of.

If a dealer purchased, say, 100 cars he at once gave the Michigan Motor Car Co. notes for $100,000, dated at periods to correspond with shipping dates, which notes were then negotiated by the Michigan company. In case a dealer did not take the cars ordered, when the notes fell due the Michigan company sent him a check to protect the notes and in turn obtained a new set of notes. As the dealers who gave them are responsible for the notes, whether or not they have received the cars, the Michigan failure may cause embarrassment in more than one retail establishment.

Because of these methods of doing business, the receiver will not be able to get to the very bottom of things for some little time. In an effort to do so, it has addressed a letter to all creditors asking for complete statements, and when they are received and checked up it is probable than considerable light will be shed and that still more illumination will be turned on by the receiver's representative, who is calling on every Michigan branch and dealer for the purpose of checking up both cars and accounts.

Stewart Takes up Accessories in Chicago.

F. W. Stewart, who for several years was connected with the Buick branch in Chicago, has gone into the accessory business in that city on his own account. He is trading as the Stewart Auto Accessories Co., at 1509 Michigan avenue, L. L. Kennedy being the local manager. Stewart has the State agency for Velvet shock absorbers, Dann oil cushion spring inserts and several other accessories, and will still further add to his accounts.

Studebaker Buys Parts Plant in Pontiac.

The Studebaker Corporation has purchased that portion of the bankrupt Flanders Mfg. Co.'s plant in Pontiac which, before it was merged by Flanders, was known as the Vulcan Gear Works. It will be employed exclusively in the production of replacement parts for Studebaker cars. It will become known as Plant No. 15 and will be in charge of W. W. Austin as superintendent.

STRIFE REGARDING WALPOLE RECEIVERSHIP GROWS TENSE

Court Has Yet to Decide Whether There Shall Be One Receiver or More—Creditors to Meet to Attempt Agreement.

Whether there shall be more than one receiver for the Walpole Tire & Rubber Co., of Walpole, Mass., which failed August 2nd, has divided the creditors into two warring camps. Those who want but one receiver and those who want more than one each have organized themselves into what is styled Creditors' Protective Committees and are now engaged in strenuous strife.

One of these committees, which favors but one receiver, is composed of R. L. Curtis, receiver of the Atlantic National Bank, whose failure brought down the Walpole company; Charles F. Wilson, representing the Charles F. Wilson Crude Rubber Co., and W. G. H. Randolph, representing the Endurance Tire & Rubber Co., who represent claims approximating $440,000.

The opposing Protective Committee, which is seeking the appointment of a co-receiver, is composed of Thomas R. Eaton, Edward H. K. Revere and Arthur Wainwright. Still another committee of creditors, composed of C. N. Draper, Edward L. Belding and John C. Meyer, also has circularized the creditors in favor of the appointment of an additional receiver.

Meanwhile, Robert C. Fisher, treasurer of the company, who was appointed receiver at the time of the failure, is still in sole charge and is operating the plant to the best of his ability, but whether or no he will remain "alone and by himself" probably will be decided on Saturday next, 16th inst.

The application of the committee of creditors who believe that more than one receiver is desirable was heard in the Federal court in Boston on Saturday last, but in response to the urging of the Curtis-Wilson-Randolph Creditors' Protective Committee, the court withheld decision for one week, or until a meeting of all the creditors could be heard and their opinion obtained. This meeting will be held in the Hotel Astor in New York this afternoon (Thursday) at 2 o'clock. Its sentiment will be conveyed to the court and undoubtedly will largely influence any decision which may be rendered.

Goodyear Official Sails to South America

J. C. MacFadyean, vice-president and general manager of the Goodyear Tire & Rubber Co. of South America, sailed Saturday last on the Imperator to Brazil, via Europe. He had just come from the Goodyear parent factory in Akron and is going south to assist in the establishment of the Goodyear factory which will be built in Rio de Janeiro. It will be a three-story reinforced concrete structure, costing more than $1,000,000, and is expected to be in full operation in less than a year. It will produce not only tires, but other rubber goods, the immediate market for tires alone being placed at a valuation of $30,000,000 annually. Instead of taking American workmen to Brazil, the Goodyear people for several months have been training six Brazilians at their Akron factory, and these men will serve as foremen and heads of departments of the South American plant.

Report Regarding Alco Again Denied.

Reports are again circulating that the American Locomotive Co. is preparing to discontinue or otherwise dispose of its Alco automobile interests. They are coupled with rumors that W. H. Marshall, president of the Locomotive company, and Leigh Best, vice-president in charge of the Alco department, will retire from office. Similar reports were rampant only a few months ago, but apparently were stilled when Best was assigned to the automobile department.

When President Marshall was asked by a Motor World representative concerning has rumored resignation, he stated that he had heard nothing about it, but that the report of his retirement was revived regularly each year. In his turn, Vice-President Best declared that if he was to resign, or if the Also automobile department was to be discontinued, he knew nothing about it.

Reiss's Hupmobile Deal Causes Changes.

Having taken the metropolitan agency for the Hupmobile, Charles E. Reiss, president of the American-Marion Sales Co., of New York, has relinquished that office to J. A. Handley, of Indianapolis, president of the manufacturing companies of those names. Reiss, however, retains his interest and will remain secretary and a director. The management of the American-Marion Sales Co. will devolve on Winfield S. Jewell, its vice-president. It will keep its present headquarters at 1896 Broadway, New York. Reiss removing to 1690 Broadway, where the Hupmobile will be handled under the firm name Charles E. Reiss & Co.

Hudson Declares Big Stock Dividend.

Having transacted business to the extent of $10,500,000 during the fiscal year ending July 1st, an increase of $3,500,000, the Hudson Motor Car Co., of Detroit, last week cut a fat "melon" in the form of a 100 per cent. stock dividend. More than $250,000 also was carried to the surplus account, the annual report of the company showing no bonded indebtedness of any sort.

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OVERLAND TO HAVE BUT ONE CHASSIS AND LOWERS PRICE

Discontinues Larger Model and Will Concentrate on Improved $950 Car —Greatly Increased Production in View.

Henceforth there will be but one Overland car, or, more correctly speaking, but one Overland chassis. While it has been considerably refined, and the equipment considerably added to, it will be substantially the 30-horsepower model which this year has sold for $985. Its horsepower, however, has been increased to 35 and its price reduced to $950.

It will be frunished with either roadster or five-passenger touring body at this price, and while its regular equipment will include electric lights, if an electric starter is desired Gray & Davis equipment will be supplied at an extra cost of $125. The same chassis will be utilized for an open delivery wagon at $900, or a closed delivery at $950, but in each case if the Gray & Davis starter is desired $125 will be added to the price of the car.

The fact that the Willys-Overland Co. purposed discontinuing their 45-horsepower $1,475 model and concentrating on the smaller car was not generally known, and for that reason the news will excite no little surprise. The move, however, is in line with the well-thought-out Willys policy of increasing production. Concentration on one model, it is estimated, will permit an increase of about 10,000 cars, bringing the Willys-Overland production for the 1914 year to 50,000.

In general appearance the $950 car follows the lines of its predecessor, but is slightly larger in every way.

The increase in the dimensions of the motor raises the piston displacement from 226.2 cubic inches to 240.5 cubic inches, the old bore and stroke and the new being 4 x 4½ inches and 4⅛ x 4½ inches, respectively. According to the A. L. A. M. formula, the horsepower rating with the old dimensions was 25.6, but with the ⅛-inch increase in bore and rating now is 27.2 horsepower. Except for the increase in dimensions, the motor remains the same, the four cylinders being of the L-head type and cast separately. A Splitdorf magneto has been substituted for the Remy instrument used in the past.

Along with the increase in the size of the motor, the wheelbase of the car has been increased from 110 to 114 inches, and instead of 32 x 3½-inch tires, all wheels now are shod with 33 x 4 tires. At the same time the body has been made roomier and the cushions deeper, and the comfort of passengers has been further looked after by increasing the width of the doors and so concealing the hinges and latches that they cannot be seen, let alone touched. Otherwise, except for great improvement in the finish, which now is in Brewster green instead of the darker color that has been used in the past and the addition of a deeper skuttle over the dash, there is very little that is new. As heretofore, power is transmitted through a large diameter cone clutch, to which there has been added a brake to facilitate gear shifting, and a three-speed selectively controlled gearset with the hand levers placed in the center of the footboard; the steering column remains at the right side.

To the list of equipment, which last year for the first time was included in the purchase price, there has been added electric lights, operated from a large storage battery, and an electric horn; the remainder of the list is as follows: Top with side curtains and boot; windshield built into place; Stewart speedometer, and the usual complement of tools, tire repair outfit, spare parts and so forth.

Buick Branch Transferred to Dealer.

The Buick Motor Co. has discontinued its branch in Cleveland, Ohio, having turned over its representation to the Ohio Buick Co., which was incorporated two weeks since for the purpose. G. C. Peckham, who for years has handled the Buick in Dayton, is president of the new Cleveland company, H. M. Adams is vice-president and H. E. Gilbert treasurer. D. A. Burke, former manager of the branch, will become attached to the Buick factory sales organization.

Dates Set for Second Flanders Sale.

Options obtained by Harris Bros. & Co. at the time they purchased the machinery and stock having been annulled by the court, the real estate and buildings comprising the plant of the bankrupt Flanders Mfg. Co. will be offered for public sale September 8th and 9th next. The property in Pontiac will be sold on the first day and that in Chelsea on the 9th, the sale, of course, being conducted by the receiver of the Detroit Press Co.

Chandler Elects Three New Directors.

To fill vacancies, W. R. Hopkins, president of the Belt & Terminal Realty Co.; J. W. Deutsch, Cleveland; William P. Herbert, Philadelphia; Albert Jarecki, president of the Jarecki Mfg. Co., have been elected directors of the Chandler Motor Car Co., of Cleveland. The officers of the Chandler company, however, remain unchanged.

ANDERSON BUYS ALL RIGHTS TO HANLON WINDOW PATENT

Gets Control in America and Abroad for Double-Pane Device—Will Incorporate Construction in 1914 Models of Electrics.

Following several months of negotiations, the Anderson Electric Car Co., of Detroit, has purchased the entire American and foreign rights under the William B. Hanlon patent for electric car windows and is incorporating this new feature, with others, in the models it is bringing out for the 1914 season; the device differs materially from the ordinary type of car window, and the inventor's claims are that the driver of a car so equipped will at all times have an unimpaired vision of the road ahead of the vehicle.

The patent, No. 993,061, was granted May 23, 1911, to William B. Hanlon, of Pittsburgh, Pa., and is best described as being a double front window, the front half of which swings outward from the bottom like a windshield. The device consists of one window which fits into more or less ordinary window fittings and which can be dropped into a pocket, much as ordinary enclosed car windows are dropped. The other window, which is located in front of this window, is hinged at the top and is so arranged that it can be swung outward from the bottom.

When the swinging window is closed an air chamber exists between the two panes, just as in the double window of a house, and it is claimed by the inventor that this will entirely prevent frosting in cold weather. In case of a storm of rain or snow, the adjustable section may be swung out as in the rain-vision type of windshield which has been used on gasolene touring cars. With this adjustment of the device the occupant of the car is protected from the cold wind and his vision is not obscured. The device, also, is equally applicable to the front of an electric railroad car.

Bremer-Wilson Going to Benton Harbor.

Having acquired substantial support in Benton Harbor, Mich., the Bremer-Wilson Mfg. Co. has been reorganized, with a capital of $150,000, under the laws of that State, and is preparing to leave Chicago. In Benton Harbor it will have two buildings, one 60 x 100 and the other 25 x 60 feet, where the manufacture of Triplex gas savers, engine starters and other devices will be carried on. Fred C. Bremer is president and general manager of the new company and I. N. Wilson secretary and treasurer.

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83 COUNTRIES PURCHASERS OF AMERICAN AUTOMOBILES

Government's Twelvemonth Summary Reveals Complete Destinations of Exported Cars—Five Continents and Oceania Buyers.

While the total of automobiles exported from the United States in the fiscal year ending June 30 was 25,286 cars valued at $26,012,934, as stated previously in Motor World, later information which has been compiled by the Federal statisticians reveals interesting information as to the volume of cars purchased by 83 different countries of the world, both large and small. The statistics do not make a comparison with previous years, but merely give the figures for the one twelvemonth.

Of the total of $1,737,141 of commercial vehicles, it is not surprising that foreign North America should lead with 60 per cent. and Europe 12 per cent., but makers of trucks and delivery wagons will be interested to know that of all South America, Argentina, Venezuela and Brazil are the main purchasers. European Russia bought 13 trucks, and in Asia the majority went to Japan. The Philippines lead in the Oceanic group with 43 and are followed by Australia and Tasmania with 17.

Austria-Hungary with 135, Spain with 186 and Sweden with 256 are comparatively heavy buyers of pleasure cars in Europe, although not separately listed in the government's monthly export compilation; the West Indies, in North America, also are active purchasers of pleasure cars, and, in South America the ranking order is Argentina, 1,062; Brazil, 987; Uruguay, 209; and Colombia, 110. The regular government report says little of Asia, but in pleasure cars the purchases there are not inconsiderable, the leaders being British India, 439; Straits Settlements, 387; Japan, 312; and the Dutch East Indies, 278. Australia and Tasmania took 2,083 and New Zealand 958, in the Oceanic group, and in Africa the leader by far is British South Africa, with 1,279.

The continents, their percentage of the whole in number and in value and the average values of cars are, respectively: Pleasure cars—North America, 31 per cent., 38 per cent., $1,228; South America, 11, 12, $1,086; Europe, 31, 25, $800; Asia, 7, 6, $869; Africa, 5, 5, $896; Oceania, 15, 14, $974. Commercial cars—North America, 56, 60, $2,071; South America, 11, 13, $2,045; Europe, 23, 12, $852; Asia, 3, 3, $1,796; Africa, 1, 6, $861; Oceania, 6, 6, $1,895. The complete statistics are shown in the accompanying table.

THE FOREIGN PURCHASERS OF AMERICAN CARS.

	Commercial.		Passenger.	
	Number.	Value.	Number.	Value.
Austria-Hungary	2	$3,959	135	$91,781
Azores	...	.....	16	10,549
Belgium	...	.....	94	85,679
Bulgaria	2	1,528	17	11,457
Denmark	3	2,120	81	77,149
Finland	...	.....	51	53,568
France	6	10,709	818	615,086
Germany	4	4,029	845	764,389
Gibraltar	...	.....	7	6,576
Greece	1	1,176	4	4,080
Iceland	...	.....	2	1,016
Italy	...	.....	331	280,961
Netherlands	2	4,489	111	94,163
Norway	2	2,200	78	66,689
Portugal	1	1,400	73	58,931
Rumania	12	12,000	38	30,337
Russia in Europe	13	34,163	580	484,913
Servia	...	.....	2	1,160
Spain	1	1,400	186	127,621
Sweden	...	.....	256	235,918
Switzerland	...	.....	22	24,965
Turkey in Europe	...	.....	13	9,814
England	184	119,468	3,783	2,893,785
Scotland	...	.....	6	8,104
Ireland	...	.....	6	5,538
British Honduras	...	.....	1	1,800
Canada	489	1,004,237	6,723	8,229,324
Costa Rica	2	3,643	13	14,955
Guatemala	...	.....	10	14,892
Honduras	1	3,000	4	8,100
Panama	...	.....	39	43,432
Salvador	...	.....	11	13,212
Mexico	35	83,363	235	423,123
Newfoundland	4	8,845	9	10,353
Barbados	...	.....	7	5,973
Jamaica	4	9,234	62	59,131
Trinidad	...	.....	43	39,902
Other British West Indies	...	.....	7	6,716
Cuba	14	23,639	223	242,686
Danish West Indies	1	4,250	4	2,131
Dutch West Indies	...	.....	19	14,590
French West Indies	...	.....	5	3,877
Haiti	3	5,553	38	24,499
Santo Domingo	1	1,858	7	5,382
Argentina	35	78,000	1,062	1,181,735
Bolivia	...	.....	2	1,493
Brazil	36	75,073	987	1,035,247
Chile	...	.....	78	109,982
Colombia	3	6,112	110	113,334
Ecuador	1	2,017	74	55,372
British Guiana	...	.....	18	14,313
French Guiana	...	.....	1	558
Peru	...	.....	70	55,646
Uruguay	7	19,280	209	273,253
Venezuela	23	34,291	104	109,499
Aden	...	.....	15	7,998
China	...	.....	89	90,456
Chosen (Korea)	1	3,500	7	6,095
British India	...	.....	439	355,573
Straits Settlements	2	5,588	387	319,247
Other British East Indies	...	.....	39	31,245
Dutch East Indies	2	4,840	278	198,378
Hongkong	...	.....	7	6,673
Japan	21	32,770	312	364,507
Russia, Asiatic	...	.....	1	1,160
Siam	...	.....	56	35,934
Turkey in Asia	...	.....	1	824
Australia and Tasmania	17	23,027	2,083	1,896,990
New Zealand	1	1,201	958	990,837
Other British Oceania	...	.....	3	2,396
French Oceania	2	3,400	11	14,005
German Oceania	...	.....	1	350
Philippine Islands	43	91,809	517	577,040
British West Africa	...	.....	4	2,688
British South Africa	11	9,476	1,279	1,157,895
British East Africa	...	.....	14	12,802
Canary Islands	...	.....	10	6,426
French Africa	1	858	10	7,297
German Africa	...	.....	5	3,175
Liberia	...	.....	1	805
Portuguese Africa	...	.....	20	16,102
Egypt	...	.....	16	10,156
Total	993	$1,737,141	24,293	$24,275,793

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The Week's Incorporations

Grand Rapids, Mich.—Reed & Blickley Auto Co.. under Michigan laws; authorized capital, $10,000.

Niles. Mich.—Bremer Wilson Mfg. Co., under Michigan laws; authorized capital, $100,000; to manufacture motor cars.

Hamtramck, Mich.—Vanguard Mfg. Co., under Michigan laws; authorized capital, $100,000; to manufacture automobile engines.

Detroit, Mich.—Silas Electric Co., under Michigan laws; authorized capital, $2,000; to operate a garage. Corporators—H. T. Silas, D. MacKay.

Detroit, Mich.—LaBell Funeral Motor Car Co., under Michigan laws; authorized capital, $25,000. Corporators—Alex LaBell, M. W. Benjamin.

Detroit, Mich.—Harris Bros. Co., under Michigan laws; authorized capital, $25,000; to deal in motor cars. Corporators—Abraham Harris, J. S. McDowell.

Cincinnati, Ohio—Motor Transportation Co., under Ohio laws; authorized capital, $250,000. Corporators—George Schorr, E. H. Hoelscher, W. G. Hoelscher.

Detroit, Mich.—Wilson-Schroeter Agency, under Michigan laws; authorized capital, $1,000; to deal in motor cars. Corporators—W. L. Wilson, R. F. Schroeter.

Rochester, N. Y.—Motor Register Co., under New York laws; authorized capital, $25,000. Corporators—T. B. Pratt, C. A. Huber, C. F. Mosher, all of Rochester.

Detroit, Mich.—Wetmore-Quinn Co., under Michigan laws; authorized capital, $50,000; to deal in motor cars. Corporators—H. S. Quinn, J. M. Wetmore. and others.

Boston, Mass.—Boston Prest-O-Ceal Co., under Massachusetts laws; authorized capital, $25.000; to deal in motor cars. Corporators—William G. Todd, Merrill F. Hubbard.

Detroit, Mich.—Warner-Detroit Motor Works, under Michigan laws; authorized capital, $100,000; to manufacture motor cars. Corporators—Hugh L. Warren and others.

Cincinnati, Ohio—Cincinnati Automobile Clearing House Co., under Ohio laws; authorized capital, $5,000. Corporators—Robt. Uricho, Charles F. Hornberger. Arthur R. Spangenburg.

Logansport, Ind.—Auto Distributors Co., under Indiana laws; authorized capital, $10,000; to deal in automobile accessories. Corporators—Frank C. King, O. H. Binns, Anna E. Binns.

Lynn, Mass.—Eastern Avenue Garage, under Massachusetts laws; authorized capital, $30,000; to operate a garage. Corporators—Warren H. Beede, Fred E. Smith, William J. Meloy.

Chicago, Ill.—Illinois Storage Battery Co., under Illinois laws; authorized capital, $25,000; to manufacture electrical supplies. Corporators—W. H. Fortune, L. H. Wheeler, M. Abele.

Chicago, Ill.—Storage Battery Co. of America, under Illinois laws; authorized capital, $10,000; to manufacture electrical supplies. Corporators—H. A. Boissat, W. H. Smith, N. Divilbliss.

Chicago, Ill.—Rotax Mfg. Co., under Illinois laws; authorized capital, $2,000; to manufacture and sell automobile accessories. Corporators—William H. Appleby, Charles B. Appleby, John C. Gill.

New York, N. Y.—Walzer Corporation, under New York laws; authorized capital. $10,000; to deal in motor cars. Corporators—Charles Pechner, Samuel Sperling, Solomon Strauss, all of 299 Broadway.

Chicago, Ill.—Scott Garage Co., under Illinois laws; authorized capital, $2,500; to conduct a general automobile and livery business. Corporators—Henry S. Blum, Isadore Wolfsohn, D. J. Conchester.

Williamsville, N. Y.—Williamsville Auto Repair & Garage Co., under New York laws; authorized capital, $500. Corporators—Sylvester A. Hirsch, Christine Hirsch and George W. Walters, all of Williamsville.

New York, N. Y.—Auto Supplies Export Co. of America, under New York laws; authorized capital, $5,000. Corporators—Frank William Keegan, Lillian M. Fay, Antranik Aprahamian, all of 1777 Broadway.

Mount Vernon, N. Y.—Mount Vernon Auto Station, under New York laws; authorized capital, $3,000. Corporators—Wm. Bunn, 34 Hildreth place; LeRoy A. Preston and Lucy Preston, both of 35 Hildreth place.

Akron, Ohio—Anti-Rust Co., under Ohio laws; authorized capital, $20,000; to deal in automobiles and accessories, supplies and paints. Corporators—C. T. Grant, Frank Rice, Lena Dewey, Bessie Rice, Alex. Sicherman.

Sharon Springs, N. Y.—Sharon Springs and Canajoharie Auto-Bus and Car-Line Co., under New York laws; authorized capital, $1,000. Corporators—William H. Craig, Otto E. Eigen, C. R. Winnie, all of Sharon Springs.

Falconer, N. Y.—Falconer Iron Works, under New York laws; authorized capital, $15,000; to repair motor cars and operate a garage. Corporators—Gardner L. Gilbert, James C. Wright, Judson S. Wright, all of Falconer.

Chicago, Ill.—Woods Mobilette Sales Co., under Illinois laws; authorized capital, $15,000; to engage in general motor car business. Corporators—F. A. Woods, Frances Armstrong Woods, Edward F. Blettner, John C. Long.

New York, N. Y.—Tyreservice Co., under New York laws; authorized capital, $10,000; to deal in automobile accessories. Corporators—John C. Travis, 2 Rector street; Chas. L. Clune, Peekskill; Marie M. Hovey, 2353 Davidson avenue.

Oshkosh, Wis.—Oshkosh Pneumatic Hub Co., under Wisconsin laws; authorized capital, $20,000; to manufacture and sell pneumatic hubs for automobiles and other vehicles. Corporators—Fred E. Zeuhlke, Frank Doemel, Joseph Laus, Jr.

New York, N. Y.—Packard Transportation & Repairing Co., under New York laws; authorized capital, $3,000; to conduct a motor car repair business. Corporators—Anna T. Vacarelli and F. Paul A. Vacarelli, both of 354 East 116th street.

New York, N. Y.—Bavier Lubrication System, under New York laws; authorized capital, $10,000; to manufacture and develop systems for lubricating motor cars, etc. Corporators—Emanuel Weil, George H. Duck and Charles S. Bavier, all of 150 Nassau street.

New York, N. Y.—Auto Pedal Pad Co., under New York laws; authorized capital, $10,000; to manufacture pedal pads and other automobile accessories. Corporators—Harry Reich and Edgar M. Lichter, both of 316 West 44th street; G. Thomas Young, 706 Amsterdam avenue.

Boston, Mass.—Massachusetts Carburizing Co., under Massachusetts laws; authorized capital, $100,000. Corporators—James

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F. Walsh, Jr., Robert Whitworth, Ernest W. Woodside, George C. Slayton, Ellwood B. Spear, Walter S. Page, Patrick J. Craven, Angus M. Evans, John J. Swift.

New York, N. Y.—Peerless Non-Puncture Co., under New York laws; authorized capital, $600; to manufacture preparations for rendering tires puncture-proof, etc. Corporators—Maurice Uran, 1652 Lexington avenue; Harry Citret, 980 Tiffany street; Frank Eber, 152 West 144th street.

New York, N. Y.—Army Tire Co., under Delaware laws; authorized capital, $1,000,000; to manufacture, sell and deal in motor cars and all other kinds of wheeled vehicles. Corporators—George W. Griffin, Frank H. Kessel, Lorenzo J. Roll, Manuel M. Alegere, Jr., all of New York City.

Chicago, Ill.—National Association of Automobile Engineers, under Illinois laws; authorized capital, $2,500; to conduct a commission and brokerage business and deal in motor cars, motor boats and accessories pertaining thereto. Corporators—Arthur L. Pettet, William Roles, Leon P. Hutchins.

Minor Business Troubles.

Creditors are likely to receive payment in full, according to the report of the receiver of the Schacht Motor Car Co., of Cincinnati, Ohio. The statement, filed in the Insolvency Court last week, shows the liabilities to be $123,548.89, while the previously filed inventory and appraisement valued the assets at $243,854.73.

The Amplex Motor Car Co., of Mishawaka, Ind., which, when it built a big two-cycle car, threatened to become a real factor in the trade, has passed into the hands of a receiver. About a year since, when W. J. Mead relinquished the general management of the Olds Motor Works to become president of the Amplex company, a considerable hurrah was created, but the big things planned never came to a head and latterly the plant in Mishawaka has been devoted to the production of gasolene engines on what was a comparatively small scale.

Claiming his partner, Alva D. Stocker, will not permit him to examine the bank-book of their automobile business in Dayton, Ohio, at 16 South St. Clair street, Walter S. Smith has petitioned the court for a receiver, an accounting and a dissolution of the firm. Smith says the agreement entered into March 5, 1913, was that each should drew $30 a week and that, while he has received this amount he is unable to ascertain how much Stocker has collected of outstanding accounts. Smith further claims the equipment is worth $300 and that the indebtedness of the concern amounts to $450.

PROMINENT MEN IN TRADE WHO ASSUME NEW DUTIES

Resignations and Promotions That Serve to Place Many Workers in New Places—Few Leave the Industry.

Alvan Macauley, general manager of the Packard Motor Car Co., of Detroit, has been elected a vice-president of the company. The new office was created specially to honor him.

Howard Wagner, former sales manager of the Buffalo Electric Vehicle Co., has been added to the staff of the Nordyke & Marmon Co., of Indianapolis. He will serve as special factory representative.

A. E. Berdon, chief engineer of the Esterline Co., of Indianapolis, and designer of a number of electrical devices bearing his name, has tendered his resignation. His future intentions are not yet public property.

F. B. Ludwig, former sales manager of the Edwards Motor Car Co., of New York, has been appointed Southern district manager of the Velie Motor Vehicle Co., of Moline, Ill. He will make his headquarters at the Velie branch, in Atlanta, Ga.

Frank A. Groves, sales manager of the Speedwell Motor Car Co., of Dayton, Ohio, has resigned that office and will leave the automobile industry. He is to become sales manager of the Near-Side Car Co., of New York, which controls several street car devices.

C. H. Gray, manager of the Goodyear Tire & Rubber Co.'s branch in Milwaukee, has resigned that position and will return to Texas, where he expects to set up in business for himself. Gray had been identified with the Goodyear company for some nine years.

John B. Richards, for the past nine years superintendent of the Springfield Metal Body Co., has been appointed manufacturing superintendent of the Stevens-Duryea Co., of Chicopee Falls. He will relieve Geo. W. Kerr, who hereafter will devote himself wholly to the designing and engineering departments.

In order to devote himself to his personal business, C. A. Hawkins, manager of the White Co.'s San Francisco branch since its inception, has tendered his resignation, to take effect August 15th. He will be succeeded by George A. Urquhart, manager of the White branch in Dallas, Tex., who also is a veteran in the White service.

Hoover Holton, sales manager of the Empire Automobile Co., of Indianapolis, has resigned to become identified with the J. I. Handley Co. of that city. A. H. McIntyre, who has been identified with the oil trade in New England, has likewise severed that connection to become New England district manager for the Handley company.

F. R. Bump, one of the veteran sales managers of the trade, has been appointed general sales manager of the J. I. Handley Co., of Indianapolis, which recently was formed to market the outputs of the Marion and American Motors companies. Bump's most recent connection was with the R. C. H. Corporation, of Detroit, which he served as assistant general manager.

E. T. Georges, former consulting engineer of the General Motors Co., of Detroit, has been appointed superintendent of the Chase Motor Truck Co., of Syracuse, N. Y. J. W. McDonald, once chief of the experimental department of the Brush Runabout Co., and later master mechanic of the Elmore Mfg. Co., also has been added to the Chase staff in the capacity of master mechanic.

H. H. Newson, who in turn was manager of the Hayes Mfg. Co., of Jackson, and the McCord Mfg. Co., of Detroit, has been appointed manager of the Keeton Motor Co., of the latter city. Newson is a graduate of Purdue University and is a gas engine specialist. In his new position he will relieve Vice-President Keeton of many details, permitting the latter to devote more time to the Keeton-Canadian, of which he is president.

Recent Losses by Fire.

Mercer, Pa.—Moon Bros.'s Garage, destroyed. Loss not stated.

Albert Lea, Minn.—Hanson's Garage, destroyed. Loss not stated.

Brooklyn, N. Y.—J. Michaels, 324 Warren street, garage destroyed. Loss, $2,500.

Holyoke, Mass.—L. Stazey, 107 High street, garage destroyed. Loss, $2,000.

McKeesport, Pa.—George Baehr, 327 9th avenue, garage damaged. Loss, $50,000.

Cincinnati, Ohio—Thomas Egan, Edgecliff road, garage destroyed. Loss, $2,000.

Springfield, Ohio—Motor Service Co., McHenry building, building damaged. Loss, $5,000.

Akron, Ohio—Goodyear Tire & Rubber Co., waterproofing department destroyed. Loss, $20,000.

Pelham, Ga.—J. S. McClendon, garage and several cars destroyed. Drake & Glausier's repair-shop damaged. Loss not stated.

New Orleans, La.—Enterprise Electric Co., 413 Baronne street, vulcanizing department damaged. Louisiana Motor Car Co., same address, building and contents damaged. Loss, $50,000.

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In the RETAIL WORLD

S. D. Stephenson, of Clovis, Cal., plans to erect a garage.

Royal & Moffett, of Monson, Conn., are building a new garage.

J. H. Kirk has completed a new garage in Los Angeles; it cost $15,000.

T. J. Pedicord, of Spokane, Wash., plans to erect a new garage; it will cost $2,000.

George D. Broaded has opened a garage in Covina, Cal. It is located on Citrus avenue.

Samuel Beab, of Rogers, Tex., has sold his automobile and garage business to R. B. Lewis.

M. K. McLaughlin is erecting a garage in Manchester, N. H. It will stand on Old Falls road.

Harold H. Adams, of Brockton, Mass., has opened a garage; it is located on Warren avenue.

E. M. Brown, of Orange, Tex., plans to build a garage; he has secured a site on Division street.

F. A. Boericke, of Bryn Athyn, Pa., is securing plans for a garage which he will build in that town.

M. B. Sherman is about to erect a garage in San Diego, Cal. It will be located at 563 22nd street.

The Van Dusen Tire Co., of South Gay street, Knoxville, Tenn., is having a building erected for its use.

Glenn E. Brubaker proposes to open a garage in Litchfield, Ill. A building is now being remodeled for his use.

Tiffany Garage is the name of a new business in Poughkeepsie, N. Y.; a garage is being erected on Market street.

William Butterworth, of Moline, Ill., is about to erect a building for use as a garage and stables; it will cost $35,000.

The Union Motor Car Co., of Bakersfield, Cal., proposes to erect a garage on 10th street; the estimated cost is $2,000.

Kowalke & Doty is the style of a new repair firm in Benton Harbor, Mich. They have located at 350 Territorial street.

The Morrison Motor Co., of Augusta, Me., will occupy when completed a garage which is being erected on Silver street.

The Greenlee-Hinshaw Automobile Co., of Hutchinson, Kan., will erect a new fireproof building; it will stand on 1st avenue.

Crawford & Buchner, of Bakersfield, Cal., are about to build a new garage and salesrooms on 19th street; they handle Maxwell cars.

M. Shrodt, of Shrodt & Merges, Albany, N. Y., plans to erect a one-story brick garage, 62 x 80 feet; it will stand on Quail street.

Claude Bradford of New Haven, Conn., has sold his garage business to John Laferty, of the same city; Laferty is a Moon dealer.

Sharp & Robbins have opened a garage in Trenton, N. J., on South Broad street; they also operate a repair-shop on South Clinton avenue.

A. M. Signor, Jr., of Scranton, Pa., is about to open a garage at 329 Adams avenue; the style will be Signor's City Hall Garage.

W. J. McCabe is to erect a garage in Duluth, Minn., on Howard avenue, between St. Andrews and Lewis streets; the cost will be $4,500.

The Central Garage is the style under which Thomson & King have opened up in Phoenix, Ariz. It is located at 227 North Center street.

Myerscough & Buchan have opened a garage in Andover, Mass., on Main street; they plan to install an up-to-date machine-shop equipment.

The Piqua (Ohio) Auto Supply Co. has opened for business at 133 North Main street; it deals in supplies, accessories, cars and motorcycles.

H. N. Smith, of Bridgeburg, Ont., has awarded the contract for a fireproof garage, 60 x 50 feet; it will stand at Niagara and Princess streets.

H. Newmark, of Los Angeles, has been granted authority to build a garage at 1248 Wholesale street; the application names $25,000 as the cost.

Samuel H. Ober, formerly of Salina, Kan., has entered the trade in Ottawa, in the same State; he has taken the Regal, Abbott-Detroit and Lozier agencies.

The Wheaton (Minn.) Auto Co. has been taken over by Jacob Neilemor, formerly of Granite Falls, in the same State; he will continue the garage business.

The James Horne Co., of Pittsburgh, Pa., has awarded the contract for a new garage to be erected on South street; it will represent an expenditure of $25,000.

Jacob F. Kress, of Johnstown, Pa., has secured permission to erect a three-story steel garage on Washington street; the estimated cost is $80,000.

Curtiss Dawson has purchased the interest of his partner, Reynolds Dale, in their repair business in Tiskilwa, Ill. Dawson will continue the business alone.

Horst & Streiter, of Rock Island, Ill., plan to establish a garage business in Port Byron, in the same State; they have rented and will remodel the Rogers granary building.

J. G. Wendel, of 158 Grand street, New York City, has secured permission to erect a one-story garage, 57.3 x 61.3 feet, at 7th and Lewis streets; the estimated cost is $8,000.

The Bentel-Mackey Co., of Los Angeles, will take possession of a new four-story building September 1; it is located on Grand avenue, between 10th and 11th streets.

The Hancock County Auto Co., of Marshalltown, Ia., has taken possession of a new brick, one-story garage; it is located on Main street and has a complete garage equipment.

The Auto Tire Repair Co., of Oyster Bay, N. Y., has reopened for business following a fire in its place of business; it is now in the Sagamore Garage building, on West Main street.

The Torrington Welding Co. has been formed in Torrington, Conn., for the purpose of conducting a garage and automatic gas cutting and welding business; it opened for business August 1.

Z. T. Eagleston and A. B. Shanks are about to enter the trade in Smithville, Tex., under the style Smithville Auto & Machine Co. They have leased and will remodel a building on 2nd street.

The Lawrenceville Auto Co. has taken over the automobile business of the Robinson Donaldson Buggy Co., of Vincennes, Ind. The company will handle Studebaker, Chalmers and Lozier cars.

E. B. Fitzsimmons, of Lindsay, Mich., is

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preparing to remove his garage to Sarnia, in the same State; he has leased, in Sarnia, a building at George and Front streets, formerly used as a livery stable.

The Fort Dodge (Iowa) Auto Transportation Co., which is about to inaugurate a motor 'bus service in that city, will build a garage for its cars; the proposed building will be one-story and 40 x 100 feet.

The Cartercar Nebraska Co., of Omaha, of which W. E. Foshier is president, is about to establish an agency in Council Bluffs, in the same State; a location has been secured on West Broadway.

The Gilman-Garland Garage, of Saco, Me., has changed its name to Garland Auto Co. William A. Gilman and Ira Garland constitute the company; a concrete garage will be erected on Peperell square.

E. H. Preston, of Bloomington, Ill., and Fred W. Dooley, of Downs, Ill., have formed a partnership and will open salesrooms near Washington street, in Bloomington; they will distribute Oakland cars.

William Eaton, formerly an automobile salesman in Seattle, has formed a company in that city to handle the Pope-Hartford line for Washington, Oregon, Idaho and British Columbia; Eaton is aided financially by a wealthy resident of White River Valley.

R. J. Strong, for five years connected with the Ajax-Grieb Rubber Co., formerly as a traveling representative in the West but more recently in New York State, has resigned to enter business for himself; he has secured the Buffalo, N. Y., representation for Miller tires and has located at 846 Main street, under the style Miller Sales Co.

The Champaign (Ill.) Buick Motor Co. has taken over the Champaign branch of the Illinois Motor Car Sales Co., on West Hill street; the latter company plans to continue selling Michigan and Marmon cars in Urbana, in the same State. J. C. Fidler will direct the sale of Buick and Chalmers cars in the Illinois branch location for the Champaign Buick company.

H. D. Graves, of 120 Allyn street, Hartford, Conn., and the Capitol City Auto Co., at Allyn and High streets, have combined interests; Graves handled Henderson and Lozier cars and the Capitol company Mitchells and Stewart trucks, all of which now will be marketed under the Capitol City sign. Graves, who recently took over the Imperial Garage, has been made secretary of the Capitol City company; the other officers are: President, Bernard F. Smith; treasurer, W. F. Dahill.

J. J. Jones, of the Jones Auto Exchange, of Wichita, Kan., has had plans prepared for a six-story and basement building, 100 x 140 feet; it is said it will be the largest structure of its kind in the Middle West and, with the site, will cost $100,000. The building will include refinishing, repair, storage and all other departments essential to the operation of the business. Jones, who went to Wichita 12 years ago and borrowed $800 to start in business as a trader in almost anything, handles Fords and has taken on the new Wahl car. When the building is completed Jones's business and that of the R. C. H. Garage, 114 North Topeka avenue, will be consolidated.

'Frisco Dealers Claim Excessive Charges.

Nearly all of the principal dealers in San Francisco have joined in lodging a complaint with the Interstate Commerce Commission against the Lake Shore & Michigan Southern Railroad et al for excessive charges on carload shipments of automobiles from various Eastern factories. They claim that the overcharges are due to the practice of the railroad company of charging for the weight of the decking or flooring with which the freight cars are provided. The dealers maintain that, as this decking or flooring is furnished and installed by themselves without expense to the railroad, and as it permits the freight cars to be loaded to from 3,000 to 4,000 pounds in excess of the carload minimum, the railroad charge is unjust and unreasonable. It is significant that Western Classification No. 51, I. C. C. 9—a classification which is usually attacked by shippers for its unusually unfavorable conditions—in this case is in favor of the automobile people in that it provides, in rule 29, for the free transportation of such flooring.

Rajah-Grossman Relations Adjusted.

Although the Rajah Auto Supply Co., of Bloomfield, N. J., recently discontinued its suit in the United States District Court for the Southern District of New York against the Emil Grossman Co., of New York City, as previously stated in Motor World, the discontinuance has been followed by an adjustment of relations between the two companies regarding the Rajah removable porcelain spark plug patent, No. 825,856. The Grossman company had previously been enjoined from infringing the patent and the court had later refused to hold the Grossman company in contempt of court for selling porcelains, whereupon this second infringement suit was brought on the porcelain selling.

By the adjustment now existing the previous injunction is amended to include the selling of porcelains, knowing they are to be used in Rajah plugs, but the Grossman company is permitted to sell porcelains for other purposes. Also, the Rajah company agrees not to advertise its amended injunction, this agreement following the Grossman charge that the suit had been brought for advertising purposes.

Lansden Files Schedules in Bankruptcy.

According to its schedules in bankruptcy, filed on Friday last in the bankruptcy court in Newark, N. J., the Lansden Co. has assets of $304,046 and liabilities of $193,000. The assets are made up of machinery, $72,340; manufactured goods at Newark, $47,436; manufactured goods at Allentown, $70,842; finished parts in Chicago, $10,000; sundry material of the Auto Maintenance Co., $10,000; bills receivable, $32,516.

The debts represent some 300 creditors, the largest of whom is a Jersey City bank, whose claim is in excess of $31,000, partly secured, and a Newark bank, unsecured, $12,500. The largest unsecured claims, however, are those of the Edison Storage Battery Co. and the General Electric Co., amounting to approximately $30,000.

Bidwell's California Project Changes Name.

The Western I. A. L. Purchasing Corporation, of Los Angeles, has changed its name to the I. A. L. Tire Co. The enterprise is an outgrowth of the International Automobile League, of Buffalo, and was organized last year by A. C. Bidwell, its president. It has figured in the litigation in which Bidwell since has been involved in his home town.

Goble Forms a Firm in Detroit.

George E. Goble & Co. is the style of a new firm of manufacturers' agents who have opened an office at 600 Woodward avenue, Detroit. Among the accounts they will handle are those of the Lee Tire & Rubber Co., Victor Rubber Co., Axle Equipment Co. and the Universal Welding Co.

Peerless Branch "Takes on" Electrics.

The Peerless Motor Car Co.'s branch in Boston has "gone into" electrics, having taken on the agency for the R. & L. It goes without saying, however, that the Peerless gas cars will continue to be the branch's mainstay.

Studebaker Closes Two More Branches.

Continuing its policy of concentration, the Studebaker Corporation has discontinued its branches in Buffalo and Cleveland. B. F. Kinsman, former manager of the Buffalo branch, will, however, remain in the Studebaker organization.

Speedwell Debtor to Telephone Company.

Judgment for $61.54 was filed this week in the New York county clerk's office against the Speedwell Motor Truck & Service Co. The latter is located in New York City.

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A. B. SWETLAND, President and General Manager
F. V. CLARK, Business Manager.

EDITORIAL DEPARTMENT
R. G. BETTS, Managing Editor
S. P. McMINN HOWARD GREENE
R. W. SHERMAN

ADVERTISING DEPARTMENT
BROCK MATHEWSON, Manager
New York Office
1600 Broadway
HOWARD L. SPOHN LOUIS R. SMITH O. H. ADAMS

Western Office
1001 Ford Bldg., Detroit, Mich.
W. H. TRIPP, Mgr.

Detroit
1001 Ford Bldg.
MAXTON R. DAVIES

Cleveland
610 Superior Ave. East
C. H. HANDERSON

Chicago
Room 510 Harvester Building
606 South Michigan Avenue
H. A. WILLIAMS

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SEEKING SUBSTITUTES FOR "HORSEPOWER."

It is probable that in the course of time engineers throughout the world will agree on a method of power rating and a designating term that will have a definite meaning of its own and no connection with the animal kingdom; and it is probable that such a method of rating will be applicable to all fluid pressure motors, whatever their source of energy. It is not probable, however, that any such result will be attained in a day or a year. The problem is too difficult for snap-shot solution, as is indicated by the fact that eminent engineers, agreeing on the awkwardness of the present state of affairs, disagree as to the remedy; nor is it possible to bring about any appreciable degree of relief by substituting one more or less arbitrary standard or term for another.

While the suggestion frequently has been made that the kilowatt be substituted for the horsepower as a rating for motors of all kinds, and while German engineers have agreed to use it in place of horsepower, it is difficult to see what is gained by such a movement, apart from uniformity of terminology. Fundamentally a kilowatt is in exactly the same class as a horsepower; that is to say, it represents so much power without any reference whatever to the motor which generates that power. A given kilowattage may be developed by a small electric motor running at high speed or by a large motor running at slow speed, and the relation of voltage to amperage may be anything. Similarly, a given horsepower may be developed by a small high-speed engine or by a large slow-speed engine, and the ratio of piston displacement to horsepower may be anything.

The adoption of the kilowatt as a measurement of power could afford no relief, for the mere fact of using the same system of rating for both gasolene and electric motors would lead nowhere in particular. As Motor World has repeatedly maintained, the most practical and most sensible basis for a power rating for explosion motors is piston displacement, which has the immense advantage that it is a fixed quantity in the motor itself and for calculation affords an unchanging foundation, inherent in the engine, which cannot be said either of the horsepower or the kilowatt. If it is impossible or undesirable to arrive at a unit of horsepower based on displacement, designations in cubic inches would convey more than does the term in general use or the one adopted by the Germans.

PROTECTION FOR THE REAR TANKS.

The subject of the unprotected gasolene tank carried at the rear of the car is by no means a new one. It has been before remarked by Motor World, but the notable increase in the number of cars so equipped has given to the matter new importance.

The point is that while the tank is in such a position that it is exposed to danger of damage from manifold sources, no attempt has been made to protect it in any way. A tank hung in the rear may be struck by the wheel of a backing vehicle, or by the low-hanging tongue of a horse truck. It may be damaged by contact with a hydrant or other object if the car is backed a little too far. There are so many possible sources of danger that anyone can readily compile a long list of them. And that they are much more than mere potential dangers is patent to anyone who will keep his eyes open, for there are numerous tanks that bear marks of violence in the shape of dents and even patched punctures.

The fact that these tanks are unprotected is hard to understand, not only because of the strong possibility of damage, but because a puncture or the forcing open of a seam means the rapid expelling of the gasolene by the pressure designed to force it to the carburetter, and if a means of ignition is present a pressure-fed fire is the logical result. Such fires have occurred, with disastrous results. The proximity of the exhaust pipe to the tank is a point that affords much food for serious thought in connection with the fire risk.

There is no apparent reason why there should be any serious difficulty in adequately protecting a gasolene tank hung at the rear of the chassis. The frame of the car affords the same anchorage for a protecting device that it does for the tank itself, and the precise form of the protector is immaterial, as long as it is efficient. And there is yet another angle of view. The maker who first equips his rear tank with an efficient protecting device will be first in the field with an argument in favor of his car that can have no mean weight with people who think.

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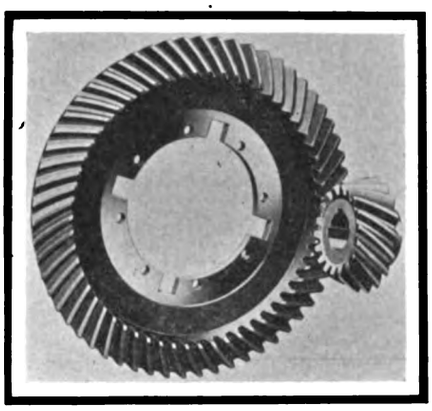
SILENT WORM BEVEL DRIVE IS DEVELOPED BY PACKARD

Clever and Complex Design that Substitutes Sliding for Clashing Engagement—Eliminates Back-Lash and Noise.

It has been fairly well known for the better part of a year that the Packard Motor Car Co., of Detroit, which always has been a stickler for quiet running of its automobiles, has been quietly working toward the development of a new type of gear for the final drive from the propeller shaft to the live rear axle. Part of the second floor of the gear-cutting department of the big factory was partitioned off for the special experimental work, and what went on behind the tightly closed doors did not leak out to any appreciable extent. In time, however, the fact that the object of the secret work was the production of what was termed a worm bevel drive became known, though not widely. By that time the first really practical gears had been installed in a car and given road tests which were of a character calculated to slightly "loosen up" the sources of information; but so careful have the Packard people been that formal announcement of the adoption of the new gear drive was deferred until the completion of long service tests, and, in fact, only just has been made.

The accompanying illustration shows just what the worm bevel is, and does so more satisfactorily than words alone could do. The teeth are so shaped that they come together with a gradual, sliding action, instead of the broadside slapping that characterizes the meshing of teeth cut in the ordinary way. The result is that noise in the running of the gears is eliminated to all intents and purposes, as is also the backlash that is so difficult to avoid in straight-cut bevels, or any other ordinary gears, for that matter. Because the teeth of the new gears are curved, they afford a greater area of contact surface than straight teeth, and at the same time the curving form results in a sort of overlapping of the meshing process, the meshing pair coming together before the unmeshing pair become separated.

The quiet running of Packard cars always has been a matter of special pride with the makers, and though the bevels formerly employed were as nearly silent as they could be made, they were not considered quite good enough, and though various gear forms were tried in the search for something better, no substantial improvement was found possible until the factory manager, F. F. Beall, who is a past master in gear work, suggested the possibility of developing the worm bevel. The work in the designing room required months, for simple though the gears may appear, they really are extremely complex, so far as matters of design and lay-out are concerned, and endless calculation and much experimenting were required. After the draughting room had finished its work, the tool-makers took up the actual construction of the gears, and it required three weeks to make the first set. So well had the preliminary work been done that these original gears, when installed in an experimental car, worked out so satisfactorily that the necessary machinery for manufacturing was installed. Incidentally, it was necessary to design entirely new machine tools for the purpose, owing to the exceedingly peculiar form of the teeth.



PACKARD SPIRAL BEVEL DRIVE

Ford Loses Fight to Protect Dealer.

Those 13 Ford Model T's, which caused trouble for the Ford Motor Co., Bowring & Co., exporters, and the steamship Minnehaha, last February, are in New Zealand by this time, or nearly there, anyway, and the suit which the Ford company brought in the Supreme Court for New York county to have the shipment held up was discontinued this week. So far as preventing their exportation, the litigation was unsuccessful.

Ford claimed the cars were sold from the factory with the understanding that they were going to Canada, but that Bowring & Co. secured possession of them and undertook to ship them to New Zealand, where the Ford company has a regular distributer; court proceedings were instituted and an injunction was denied, but pending an appeal the steamship company agreed to retain possession of them, in the hold or in London, until the suit was settled.

Ford carried its case to the Appellate Division and was again denied an injunction, wherefore the cars were permitted to go on to New Zealand and the suit was discontinued.



*Indicates Sanction by A. A. A.

Aug. 15-16, Denver, Col.—Track racemeet under auspices of J. A. Sloan.

August 16, White Plains, N. Y.—Track racemeet under the auspices of George T. Long.

August 20-21, Newport, Ind.—Newport Motor Club's fifth annual hill climb.

Aug. 25-28, Houston, Tex.—Houston Automobile Club's reliability tour.

August 29-30, Chicago, Ill.—Elgin Road Race Association's road races, under auspices of Chicago Automobile Club.*

August 30-September 6, Chicago, Ill.—Reliability tour of the Chicago Motor Club.

Sept. 1, Columbus, Ohio—Columbus Automobile Club's track racemeet.

September 8-13, Chicago, Ill. — Chicago Motor Club's Around Lake Michigan reliability tour.*

Sept. 9, Corona, Cal.—Speedway track races, under auspices of Corona Automobile Association.

September 12, Canfield, Ohio — Canfield Fair Association's track racemeet.

Sept. 13, Covington, Ky.—Cincinnati Automobile Club's track racemeet.*

Sept. 13, Grand Rapids, Mich.—Grand Rapids Automobile Club's track racemeet.

Sept. 20-21, Detroit, Mich.—Track racemeet under auspices of Michigan State Fair.

Oct. 10-17, Paris, France—Annual automobile salon.

November 2-3, Los Angeles, Cal.—Los Angeles to San Diego to Phoenix road race.

November 4-5, El Paso, Tex.—El Paso Automobile Club's road race between El Paso and Phoenix, Ariz.

Nov. 6, Phoenix, Ariz.—Track racemeet under auspices of State Fair Association.

November 24, Savannah, Ga.—Vanderbilt Cup road race under auspices of the Savannah Automobile Club.*

November 27, Savannah, Ga. — Grand Prize road race under the auspices of the Savannah Automobile Club.*

January 3-10, New York City—Automobile Chamber of Commerce's national automobile show in Grand Central Palace.

January 24-31, Chicago, Ill.—Automobile Chamber of Commerce's national automobile show in the Coliseum and First Regiment Armory.

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DE PALMA THE WHOLE SHOW AT BRIGHTON BEACH MEET

Only One Event Escapes Him, and That Because He Did Not Start—Wishart Good Second—Big Crowd in Attendance.

Ralph De Palma went over the Brooklyn Bridge to the Brighton Beach racetrack on Saturday last, and because he went there to take part in a racemeet promoted by the Motor Dealers' Contest Association there is very little more of the story to tell; any story of the races must begin with the name De Palma and end with it, and De Palma must be very liberally spread over all of the paragraphs and well down into the summary. De Palma is the whole story; he entered only five of six races and he won only five of them—won them so easily with his wire-wheeled and yellow Mercer that those who looked on just had to snicker because his performance was so satisfying.



PART OF IMMENSE CROWD THAT SAW DE PALMA WIN

Nevertheless, De Palma was not quite the whole of the story, after all, for Wishart—"Spence," to those who know him well—was there, too, also at the wheel of a Mercer, and he very ably upheld his reputation of being the greatest little runner-up ever. He won the curtain raiser—maybe it was because De Palma was not entered—and finished close up to the slender and smiling Ralph in every other race but one. Altogether it was a clean sweep for Mercer cars, for Armour Ferguson was there, too, and he added his little bit to the power behind the broom.

Between these three men, with Ralph Mulford in a fire-spitting and extraordinarily noisy Mason thrown in by way of diversion, there was much to distract the attention of the really tremendous crowd in the big grandstand and bleachers from the heat and the two accidents that served to quicken heart-beats. With what wind there was blowing from the South and the grandstand acting as a blanket, spectators literally sweltered, and long before the one and only original Fred. Wagner fired the first starting gun coats and hats were discarded and programs were turned into fans; the "soft stuff" vendors did a rushing business.

The first of the two accidents occurred in the first 25-mile race, and it put Jessopp, who had the wheel of a National, out of business for the rest of the day and probably for the rest of the month. Jessopp was driving very fast on the last quarter turn, leading into the stretch, when a rear tire blew out and after several skids his car rolled over a couple of times into the infield, a mass of broken wreckage. Luckily, Jessopp escaped with a broken arm and a broken leg, and his mechanician was unhurt, except for a few bruises. A little later and at the same spot, Le Cain in his Stutz narrowly averted a similar catastrophe; his car skilled completely around twice before he could get it under control and drive into the paddock. In the last lap of the second 25-mile race, Hickman in another Stutz essayed to take the grandstand turn at too great speed and came to grief against the outer fence; he was thrown clear of his wrecked machine and unhurt. The summaries:



EVIDENCE OF A WELL-FILLED GRANDSTAND—CARS BEHIND THE CLUBHOUSE

10 miles, Class C, 231-300 cubic inches—Won by Spencer Wishart, Mercer; second, Armour Ferguson, Mercer; third, Roberts, Roberts Special; fourth, O. B. Matthews, Mercer. Time, 10:17.81.

10 miles, Class C, 301-450 cubic inches—Won by Ralph De Palma, Mercer; second, Hickman, Stutz. Time, 10:10.

Five miles, Class C, under 600 cubic inches—Won by Ralph De Palma, Mercer; second, Spencer Wishart, Mercer; third, Armour Ferguson, Mercer; fourth, Roberts, Roberts Special. Time, 5:08.

25 miles, Class D, free-for-all—Won by Ralph De Palma, Mercer; second, Spencer Wishart, Mercer; third, Le Cain, Stutz. Time, 24:35 4/5.

25 miles, Class D, free-for-all—Won by Ralph De Palma, Mercer; second, Spencer Wishart, Mercer; third, Ralph Mulford, Mason. Time, 24:46 4/5.

10 miles, Class E, free-for-all handicap—Won by De Palma, Mercer (scratch); second, Wishart, Mercer (20 sec.); third, Mulford, Mason (40 sec.). Time, 10:25 1/5.

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SUBDEALERS THAT DON'T PAY

Average Farmer-Dealer not Energetic Salesman and a Breeder of Desire for Cut Prices — Distributer's Experiences and Resolves.

"The idea of giving farmers a sub-agency in the hope that they will sell cars should be punctured; it doesn't do a thing for a dealer except spoil the sale of cars in that farmer's community at regular prices," is the statement of a dealer who is known among other dealers as a shrewd salesman and a good organizer and who sells cars in one of the hardest territories in the country. "Sooner or later, somehow or other, the neighbors learn that he has received the agent's commission and, instead of buying from him or through him, they want to get the same discount he got. And unless they get it they will not buy.

Trouble that Rural Dealer May Cause.

"On the other hand, if you go out into that farmer's territory and sell a car he is sure to hear about it, and the next train brings him to the city to claim his commission, whether he had anything to do with the sale or not. No more farmer subagents for me. I have none at all in this county, and next year will have none anywhere. Instead, I will put a real salesman on the road with a car and let him cover the territory thoroughly. That plan worked beautifully in this county last year, and it will do just as well in some of the others.

Makes Selling an Incidental Sideline.

"The trouble with the farmer is that he does absolutely nothing for you. Just drives around on his regular business. If he gets word of someone who is going to buy a car it is sure to be somebody he knows—and someone who knows all about how he got his car; has he any chance to put it over as an agent? Not much. Of course, there may be exceptions, but I have not struck any of them yet."

ONE WAY TO SELL CARS AND THREE KINDS OF SALESMEN

"I have learned that there is only one way to sell cars," says E. V. Chilson, Detroit agent for the Jackson line. "That is to keep everlastingly after the prospects till they buy. Of course, the factory assists us with a follow-up service to each prospect, but we have to do real work and follow up the man personally—closely, too, if we want to make a sale.

Hard to Get Salesmen Who Are Workers.

"Is it hard to get salesmen? Yes—hard to get real workers. There are about three kinds who try to get jobs. One is the fellow who picks the automobile business because he thinks it easy and thinks he can drive a car most of the time; if he makes one sale a month he is satisfied. Chances are he has tried every other business first—and drifts to this because it's new, besides having the look of luxury. Then there's the fellow who never worked at anything at all and picks the automobile business because it is up-to-date and he can drive a car. Two or three sales a year would make him think he is a real salesman. Then there are the workers who really appreciate that selling automobiles is about one of the hardest things a man can go up against; and know that you have got to work for all that is in you to make good. I have two such men. And they work. So do I."

ONE MAN WHO WASN'T AFRAID TO DO "JUST A LITTLE MORE"

Howard Elliott used to be a railroad rodman and a railroad clerk, the latter of which positions has proved the pigeonhole for countless hundreds of men who seemed unable to rise above the rut; to-day Elliott is waiting until September 1, when he leaves the presidency of the Northern Pacific Railroad to head the New York, New Haven & Hartford, which, as most everyone knows, is sadly in need of new management. One day, when this proposed change brought Elliott into new prominence in the East, he was asked the reason for his success. His reason is what, in its lacking, has kept many a man from rising. He said:

Went from a Little to a Big Railroad.

"There was no particular reason for my success, except that I was in the West where there were opportunities and I was willing to work. I always tried to do a little more than was expected of me. They found that out, and once when there was a little road to build up they put me in to help out. I made good and they gave me a bigger road. In that way I built myself up in the railroad world."

WHEN IT IS WISE NOT TO SEEK TO MAKE A SALE

"What would you do if you called on a dealer and could not sell him because he had plenty of goods in stock and did not need any more?" asked a live wire salesman of another whose opinion he valued very highly. Quick as a flash came the answer:

"If the dealer did not need the goods and had plenty in stock I would consider it poor salesmanship to sell him."

"You are the first man I have asked that question who has given me the correct answer," was the rejoinder. "I asked it of one of the efficiency experts who was addressing our salesmen the other day, telling us how to do things, and he had no answer; he just fumbled and tried to get away with generalities."

If you lose an order don't yell about it. Find out why you did not get it. If you know that, your chances for next time will be very much improved.

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RESPONSIBILITY FOR DETAILS

Ability to Shift It to Assistants Sign of Bigness in Businessman — Also, Is Assurance Little Things Will Be Looked After.

To delegate responsibility is a sign of bigness. The man who is afraid to let someone else shoulder the responsibility can develop nothing larger than a peanut stand business. This brings up the point that it is impossible for one man to look after every detail. Therefore, if details must be looked after, the responsibility ought to be unhesitatingly shifted onto the shoulders of capable assistants.

Unclean Wash Basin Marred Salesroom.

The visitor to a modern garage was delighted to find a handsome salesroom, a clean, orderly garage and businesslike office. He wanted to wash his hands and was shown to a toilet room just off the salesroom. Originally it had been a clean place but apparently the wash basin had not been scrubbed for months, the mirror was all splattered with dirt, soap and water and the walls likewise. Here was a detail some one should have looked after.

Floor displays, window displays, looking after clean windows, etc., might have been settled comfortably on the shoulders of the indoor man—and he would have been glad of the compliment paid him by entrusting him with even such minor duties in addition to his larger ones.

Study your men and give them a share in the carrying out of details. You will find that they grow as you add to their responsibilities—and so will you.

WHEREIN THE HOME GARDEN SUGGESTS SALESMANSHIP IDEAS

Some men do not have a garden at home because it entails too much hard work. They would like to see the garden all right—would enjoy the vegetables and flowers—but that's as far as they go.

It is easy enough to get a garden started, but it is hard to keep it going and have it look like anything. Weeds spring up among the plants and choke their growth; the paths become hidden with long grass, and unless it is carefully tended the whole garden goes for naught.

It is a parable of business. Your territory is a garden. You sow the seed by advertising, calls, etc. Prospects grow up rapidly, but unless you keep after them carefully, systematically and regularly you are forgotten; the weeds grow up and choke your efforts—and your fine territory comes to nothing.

System and regularity is the only method of work that will keep a garden free from weeds and make it flourish; likewise system and regularity in making calls and mailing literature will keep a territory in flourishing condition and make it yield an abundant harvest.

SIGNS AND THE DIFFERENT STORIES THEY OFTEN TELL

"Too penurious to even repaint his sign. Look at it! Some of the gold leaf is off entirely; the background is green and it was originally black; and did you notice the lettering on the windows? Half of it is rubbed off; you can't decipher anything; I wonder what it's on there for? Guess he must be going out of business. That's what the signs say, anyway. Let's go somewhere else."

No, of course the signs did not talk out loud. But signs do talk—that's what they are put up for—and when they are "run down" they say a lot of things they were never intended to say. Did you ever think of that?

It does not cost much to have gilt or painted signs refinished, and the sort of talk a newly-finished sign puts up for you is the kind that gets you business. Proprietors get used to signs. The sign means little or nothing to them; they don't read their own signs. They forget the sign is for the other fellow—and to get his support it should be a prosperous, we're-in-business-to-stay sign. Do you believe in signs? Then take a look at your own and see that they are all right.

HOW GARAGEMAN KEEPS TOOLS AND ACTUALLY "KEEPS" THEM

How to keep tools, with the accent on the "keep," is a question that has puzzled many a garageman. One leader has solved the problem successfully by converting the upper half of a piano box into a tool chest. The sloping top is hinged to form a padlocked cover that, when raised, reveals the sign, "We do not loan tools." Inside are convenient shelves of various widths to conform with the sloping top. The bottom gives ample space for the storage of large wrenches, jacks, pumps and similar tools. The upper shelves are just the right width for tools of smaller size, including tap and die outfits, drills, etc. It is a good idea—preserves tools from dust and protects them against theft and at the same time "keeps" them handy.

"That'll Do" Style of Washing Car.

There are almost as many different kinds of washes and polishes as there are garages. Some of them clearly indicate the "that'll do" spirit; others show just as clearly that the garageman takes pride in his thoroughness; some come in between. What do yours show?

When and When Not to Ask for Order.

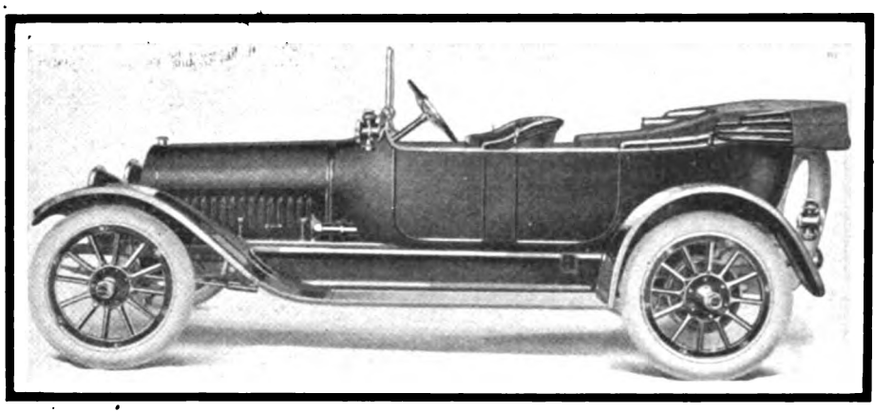
Sometimes you can get an order by asking for it; other times you get it by not asking for it. The salesman who can tell which is the right method—and apply it—is sure to win.

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DELCO FOR ALL BUICKS INCLUDING THE NEW "SIX"

Larger Motor in One "Four" and Left Steer with Center Control for All Seven Models—Few Other Important Changes.

Seven models on three chassis, instead of five models on two chassis, will comprise the Buick line for the coming season, and, as was exclusively stated in Motor World under date of June 10th, every one of the



SIDE VIEW OF NEW BUICK "SIX," WHICH LISTS AT $1,985

models, including the new "six," will be equipped with an electric lighting and engine starting system which later information has disclosed is to be the Delco. Also, all of the models have been brought quite up to date by the substitution of left drive and center control for the right drive and control hitherto used.

Except for these two changes, the two smallest models in the line, which up to the present time have been designated models 24 and 25 but which now are styled B24 and B25, the former being a roadster and the latter a touring car, are almost exactly like their predecessors in construction, and no change has been made in price; the roadster lists at $950 and the touring car at $1,050. In the next larger size chassis, however, the motor size has been changed from 4 x 4 to 3¾ x 5—B36 and B37 take the place of models 30 and 31, which were roadster and touring car, respectively, and B38 is a brand new coupe—and a corresponding increase in price has been made. B36 and B37 list at $1,235 and $1,335, respectively, instead of $1,125 and $1,285, which were the prices of the older models; the coupe lists at $1,800 and the "six" at $1,985 in both roadster and touring car. Model 40, which had a 4¼ x 4½ motor, has been dropped from the line.

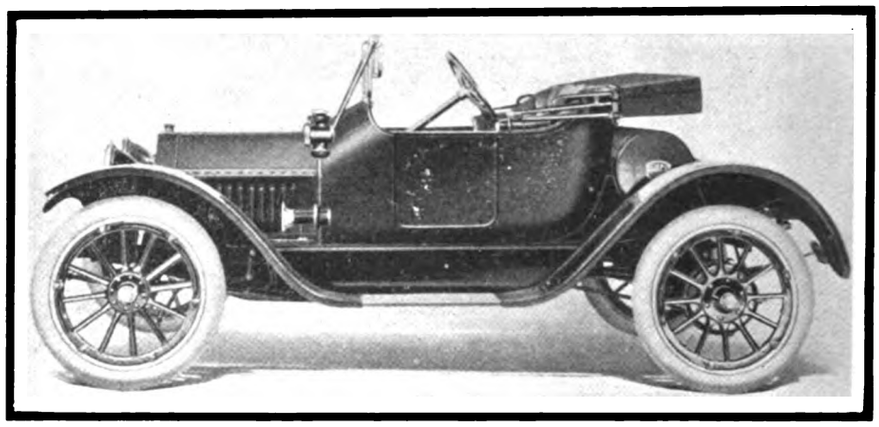
Except for a proper difference in the size of parts, all three chassis are made up of the same essential elements and there has been no change made from previous practice other than in the size of the motor in the larger four-cylinder car and in the wheel-base of that car, which now is 112 inches instead of 108 inches; a description of one model, therefore, will serve for all three. Motors, for instance, all are of the distinctive Buick overhead valve type with the cylinders cast in pairs and provided with liberal water jacketing. Ignition current is supplied by the Delco system, of course, lubrication is by constant level splash and cooling is by pump-circulated water and a vertical tube radiator. The dimensions of the smaller "four" remain 3¾ square and both the large "four" and the "six" have 3¾ x 5-inch cylinders, giving piston displacements of 221 and 332 cubic inches, respectively, and A. L. A. M. ratings of 22.5 and 33.75 horsepower.

Clutches, as heretofore, are of the cone type, large in diameter and fitted with soft leather facings to ensure smooth action. Three speeds forward and reverse are provided by the gearsets in each case, and the hand lever is placed in the center of the footboard within convenient reach of the driver. The steering wheel, which is placed at the left side for the first time, operates a semi-irreversible worm and split nut device which is easily adjustable for wear. Friction retained spark and throttle control levers are mounted atop the steering column.

In the smaller four-cylinder model, the wheelbase remains the same—i. e., 105 inches—though the rear axle now is three-quarter instead of semi-floating; the wheels are shod with 32 x 3½-inch tires carried on demountable rims. In the next larger "four" the wheelbase has been increased four inches and the wheels are shod with 34 x 4 tires all around; the wheelbase of the "six" is 130 inches, and the tires measure 36 x 4½ inches; a full-floating rear axle is used in this model. All models have two sets of brakes operating on rear wheel drums, one set being internal expanding and the other set of brakes being of the external contract-type.

Although the appearance of the two small "fours" has not been greatly altered except for slight differences in the lines, the appearance of the larger "fours" and the new "six" is quite different from previous practice, as is made plain by the accompanying pictures. The engine hood and body sides present an almost unbroken line aft, with a concave curve in the skuttle after the manner that appears to be gaining in popularity. The shape of the fenders also has been changed slightly and they fit better now than ever before.

Equipment in each case is the same and includes top with boot and side curtains, speedometer, windshield, Delco electric lighting, engine starting and ignition system, demountable rims, nickel trimmings and the usual complement of spare parts, tools, etc.



SMALLEST BUICK ROADSTER, THE PRICE OF WHICH REMAINS $950

New Engine Casting Foundry in Racine.

The Wisconsin Cylinder Foundry Co. has been organized in Racine, Wis., for the purpose of establishing a grey iron foundry for the production of engine castings. The company, which is capitalized at $25,000, is composed of Knut Tomsen, John Holz and E. J. Akr.

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"My Best Sale and Why I Regard It as My Best"

St. Louis Salesman, in Motor World's Competition, Tells of the Contract Which Brought the Greatest Satisfaction in Seven Years' Experience—"Sale From the Fire" and the Man Who Demanded Less Than List.

How to make salesmen better, how to increase the standard of efficiency, is a problem in the automobile trade—and every other. Motor World believes salesmen are made better by being shown what other salesmen have done, and that the salesman who sits down, analyzes his work and puts it in writing is bettering himself, also. Your name will not be used, if you request, but if you have ever made a sale which was particularly satisfying to yourself, if you ever have achieved a task in selling which you regard as a worthy effort, get it on paper and send it in previous to September 1st. It may bring the attention your work merits, and the best four will bring awards of $30, $20, $15 and $10.

By C. L. MARTIN, St. Louis, Mo.

During my seven years experience as automobile salesman I have landed a great many interesting deals, but a sale I made last week probably afforded me more satisfaction than any deal I ever closed.

Mr. G——, a wealthy grain broker of this city, called in our salesroom and wanted to look over our "35." He was waited on by one of our salesmen and seemed impressed with the car, but took occasion to inform him that whoever sold him a car would have to make a concession, for three reasons: First, he had lots of money and would pay spot cash; second, his nephew was chief engineer of the P—— Co.; third, his son-in-law was sales manager for the H—— Co.

Our salesman told Mr. G—— that he could do nothing on his own authority; he would have to take up with the manager. (He should have told Mr. G—— point blank that there was nothing doing, instead of leaving him under the impression that he might get a cut.) When the case was stated to the manager he promptly turned down the proposal, as cut prices are strictly against our policy. Mr. G—— called again several days later, and when informed that no concession could be made, he left the salesman cold, saying that either Jones or Smith would make him a concession, and he liked their cars as well as ours, anyhow. I happened to overhear the conversation, and when he had left I asked the salesman if he was through with him. He advised me that he did not consider the prospect worth fooling with any longer and handed me his card.

Through a little detective work, I learned that Mr. G—— usually left his office for home about 4 P. M. daily; also that his pet hobby was music, so I jumped in our demonstrator and drove down to his office and waited until he came out. I expressed surprise at "running into him" and greeted him as though I had known him for years. When informed that he was on his way home, I invited him to jump in, as I was going his way and would be honored by his company. We drove along for ten minutes, talking generalities, but I was waiting for him to talk car, and finally he opened the subject by telling me of his negotiations with my house and his failure to get together on the price. I assumed ignorance of the deal and asked him what he meant by "getting together" on the price, telling him that we had only one price and that was list.

He understood that, he said, but he was no ordinary purchaser; he was a wealthy man, discounted all his bills, had prestige in the automobile world by reasons of his relatives holding big positions with two of the largest companies, etc. When he was through, I said: "Now, Mr. G——, your points are all well taken and I am honored by talking to a business man of your standing, and while ordinarily you certainly would be entitled to a concession, this is an unusual case and will have to be treated as such. The price of our car is fixed by the factory and the price is about $200 lower than anything on the market that can compare with it. This is possible only by reason of the factory's large output and their excellent facilities for turning out their goods. This car possesses grace, speed, power, simplicity and flexibility, and is as pretty as any car, regardless of price."

During my canvass on the car I was making it perform to suit my arguments.

"As to price," I went on, "if I should sell you this car at a cut price, assuming that I would be allowed to do so, you would immediately lose a certain amount of respect and confidence in the car, believing that the car was not worth list if we could afford to sell it at a discount; and you would be perfectly justified in thinking so; on the other hand, when you know that we have one price to all and that we cannot afford to sell them for less, you will naturally think and believe that the car is worth the money and will be better satisfied with your purchase."

Here I switched to the subject of music. Being somewhat of a musician myself, I discussed the latest opera that had been in town, but I soon saw that Mr. G——'s mind was not on music but on the car, for during my talk I was making it perform as sweetly as possible. Mr. G—— soon switched back to car talk, whereupon I assumed an air of indifference and simply answered his questions in a I-don't-care-whether-you-buy-or-not sort of way. I saw the turn the tide was taking and simply dropped a remark to the effect that we still had about 20 on our waiting list, and before the season was half over we were going to be offered premiums on the "35's," as our allotment was already more than half sold. I again switched to generalities, and once more he promptly switched to cars. I let him do all the talking, simply answering his questions, and by the time we arrived at his house, which was ten miles out, he had sold himself the car, together with a full equipment of extra tires, tubes, clock, bumper, etc., and all at full list price. I carried back his signed order with a check for $200 deposit.

Now, had the first salesman let this man go, we probably would have never seen him again, for he was cognizant of his own importance and it required just such tactics to bring him to his senses.

I knew he wanted our car, for he told us so when he offered a cut price. I also knew he would be very unlikely to return after being turned down the second time; his pride and vanity would not let him.

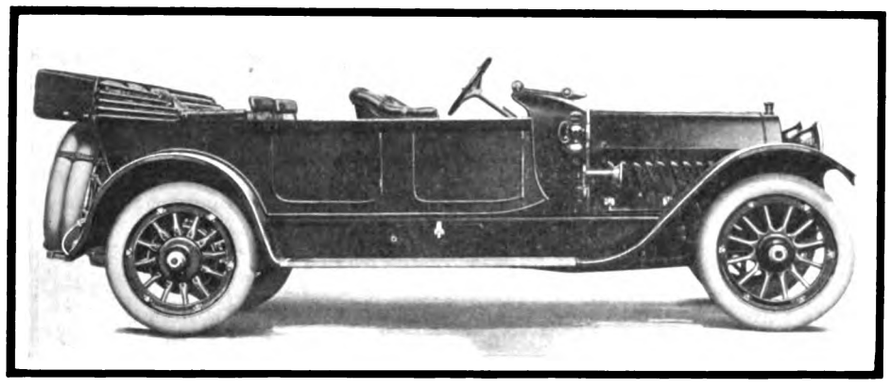
Likewise I figured that it would be poor policy to send the same salesman after him as it might lead him to think the company had something up its sleeve and would offer a cut price as a last resort, thereby causing him to withhold his order indefinitely, if not for all time.

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OLDSMOBILE PRICES CUT AND MORE POWER ADDED

Two Hundred Dollars Lopped Off List Despite Multitude of Detail Refinements—Cars' Appearance Is But Little Changed.

Progress as exemplified by the newer products of the Olds Motor Works of Lansing, Mich, is indicated by a new series number—54 replaces 53—a substantial cut in the price of the two models that will be marketed and a general enlargement of the size of the motor in the single six-cylinder chassis upon which manufacturing activities will be concentrated. None of these changes are apparent in more than the slightest degree in the appearance of the car, however; in lines and in arrangement it scarcely differs at all from its predecessors. Instead of $3,200, the five-passenger car hereafter will sell for $2,975—which is a reduction of $225—and the price of the seven-passenger car will be $3,150 instead of $3,350. Equipment remains the same.



NEW SERIES OLDSMOBILE "SIX," WHICH SELLS FOR $3,150

Aside from slight alterations in the size of parts commensurate with the greater power delivered by the motor, the principal change in the car is in the bore and stroke of the cylinders, which now measure 4¼ x 5¼, giving a piston displacement of 496.7 cubic inches and an A. L. A. M. rating of 43.50 horsepower, as against 4⅛ x 4¾, which gave a piston displacement of 430.8 cubic inches and an A. L. A. M. rating of 40.8 horsepower; needless to add, these ratings are easily and quite considerably exceeded, as is indicated by the manufacturer's rating of 50 horsepower.

The external appearance of the motor also has been altered slightly by the application of white enamel to the intake manifold, water headers and fan blades, though the cylinders are still of the L-head type and are cast in sets of three. The size of the valves has been increased from 1¾ inches to 1 15/16 inches and, as heretofore, the Delco lighting, starting and ignition system finds a prominent place in the equipment. It is the refined Delco system, however, in which the wiring has been greatly simplified and the cranking power materially increased. Cooling is by water, circulated by a centrtifugal, instead of a gear pump, and lubrication is by a combined splash and force-feed system. A later type of Oldsmobile float-feed carburetter is used, and the mixture is fired through a single set of plugs operated by a dual ignition system in which a set of five dry cells furnishes current for starting or for emergencies. As heretofore, the motor and the gearset form a compact unit that is mounted at three points in the main frame.

The clutch remains of the same efficient cone type with leather face that has been used with such success in the past, and speed changes are obtained through a three-speed selectively-controlled gearset in which high speed is direct drive. Shaft drive is retained, of course, and power is transmitted through floating type rear axles mounted on a special type of imported and domestic ball bearings. Front wheels are mounted in Timken roller bearings.

In place of the single chassis length that has been used in the past, both five- and seven-passenger models being mounted on a 135-inch wheelbase, there now are two wheelbase lengths; the five-passenger car has a wheelbase of 132 inches, and in the larger car the wheelbase is 139 inches. Coincident with this change, the size of the tires has been made 36 x 5, both front and rear, instead of 36 x 4½ front and 37 x 5 rear. Tires now are mounted on Baker straight-side demountable rims, the two spare rims being carried on special brackets attached at the back of the tonneau, where they also serve as a measure of protection to the low-hung gasolene tank. The tank, by the way, holds 24 gallons, instead of 23, and there is a reserve supply of three gallons.

In the front the chassis is supported on long, flexible, semi-elliptic springs and in the rear the spring members are of the three-quarter elliptic variety and their action is supplemented by Gabriel Rebound Snubbers, which are part of the regular equipment. Both sets of brakes are carefully equalized and operate on rear wheel drums, the size of which has been increased from 16 x 2½ to 16 x 3¼ inches; the pedal-operated brake contracts and the emergency set, operated by lever in the orthodox manner, is expanding. Both are faced with Raybestos.

In external appearance, the new Oldsmobile well might be taken for one of the earlier models, for, as already has been made plain, there is little to indicate that it is of a later vintage. The lines are practically unchanged and still present an unbroken effect, softened slightly by a long, overhanging skuttle and an upward trend at the fronts of the forward doors. The steering column is at the right side and is distinguished by one slight change, in which the worm and wheel mechanism has been replaced by a worm and sleeve device. In the seven-passenger cars the auxiliary seats fold up close to the back of the front seats, where they are quite out of the way, and both models have tonneau electric lights, as well as "plug in" trouble lamps for "scouting" service.

Equipment is complete, as usual, and includes the following: Top, boot, and patent adjustable side curtains; adjustable windshield built in place; 60-mile speedometer; clock; complete Delco electric lighting, starting and ignition system operating in conjunction with special combination electric oil lamps; Baker demountable rims with spare and carriers; tools; spare parts; tire repair kit, etc.

Pneumatic Hubs May Come from Oshkosh.

The Oshkosh Pneumatic Hub Co., which recently was organized in Oshkosh, Wis., and is reputed to have excellent backing, purposes to produce several specialties, chief of which is a pneumatic hub for motor vehicles designed by Joseph Laus, Jr., one of its organizers. The hub, of course, is designed to put the pneumatic tire out of business, so far as trucks are concerned.

Factory Acquired for Carnation Cyclecars.

The American Voiturette Co. has acquired one of the former Brush Runabout plants in Detroit, in which the manufacture of its Carnation cyclecar will be carried on. Incidentally, W. G. Houck, former sales manager of the Keeton Motor Co., has relinquished that office to devote himself entirely to the cyclecar project, in which the Keeton principals are interested.

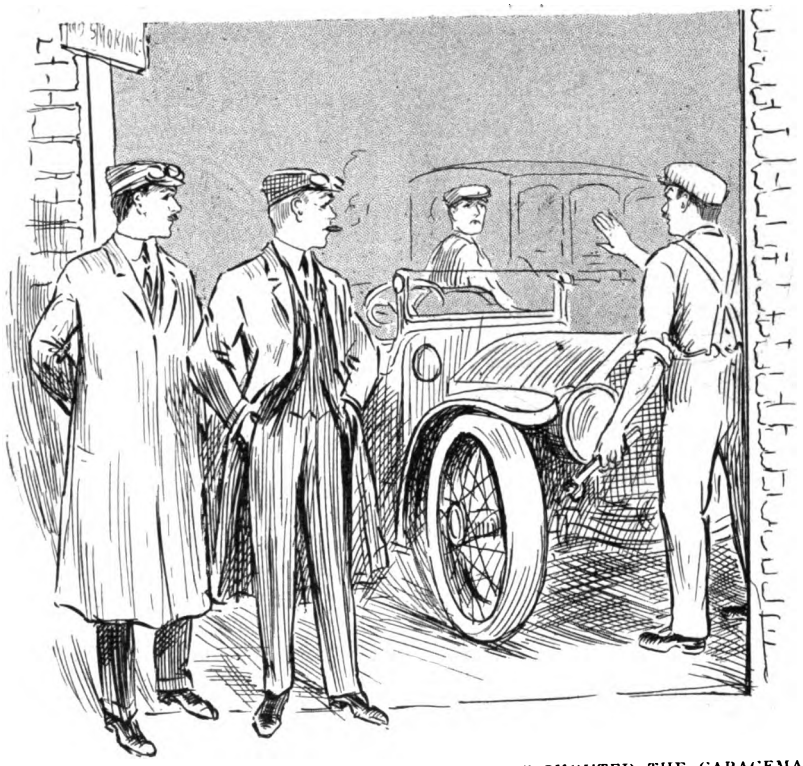
The Pennsylvania Rubber Co. has opened a branch in Philadelphia at 651 North Broad street. It is in charge of W. H. Sharpe.

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ENCOURAGING AND USING THE EMPLOYE'S IDEAS

Obstinate Garageman Causes Reilly to Place Value Upon Suggestions of the Mentally Active Workman — Cites Instances of How Sales Manager's Know-It-All Predecessor Blocked Progress.

Reilly and the Sales Manager stood in the door of a garage in Midvale and watched the cars roll by over the smooth State road; behind them, on the floor of the little building which answered the purpose of garage and repair-shop, the ex-blacksmith tinkered with the rod that joined the steering knuckles; it was like a man who comes back from a vacation—not broke, but badly bent.



"WHEN I WANT TO KNOW ANYTHING I'LL ASK YOU!" SHOUTED THE GARAGEMAN

It would not happen again in a thousand years, probably, and just how it happened was not clear to Reilly, but after driving away out in the roadside grass to get around a load of hay that had tipped over, and after experiencing a few bumps and jolts, he had reentered the highway with his front wheels badly askew. Driving all the way home was possible, but unwise; hence, a job for the Midvale garageman.

While the garageman worked on the rod his helper labored on another car. "Why not do it this way?" asked the helper, as he explained his version of how he ought to do the job he was working on.

"Damn it, Rafferty! How many times have I got to tell you that I'm running this shop? I was here before you were born, and when I want to know anything about how to do my work I'll ask you!"

Both Reilly and the Sales Manager turned as the wrathy smith answered his helper and, seeing their attention had been drawn, the garageman entered into a vindictive dissertation on these "know-it-all helpers" who "don't know their own place." He was still sputtering when Reilly and his companion pulled out and resumed their overland journey from the factory to Reilly's home town.

"Fool!" muttered Reilly, as he gave the steering wheel a wrench and stepped on the accelerator in his hurry to get away from the garage.

"Old crab, I should judge," commented the Sales Manager.

"Ever since I was a kid, he's been that way."

"But he must do a rattling transient business in that location," said the Sales Manager.

"He's taken what came to him in the past," replied Reilly, "and that has been quite a little; but he's losing now that a decent young fellow has opened up further along. There's his place now," said Reilly, pointing to a brightly painted new garage. "That helper could give the old man more business pointers than he ever could dream up in a life time, but take them? Never! He talks about know-it-all help! He knows it all himself."

"The helper does seem like a smart young man," admitted the factory man.

Getting Only Part Value from Helper.

"I don't suppose you could make that old-time blacksmith see in a thousand years that he is trimming himself and is not getting all he's paying for in that helper," asserted Reilly. "He pays the helper wages to help him, and then all he will accept is physical labor applied in the hog-headed way he insists upon. The helper is full of ideas and, I dare say, could help him build up a good supply and accessory trade, but the old cuss imagines that by accepting an idea he is displaying his own ignorance, so he goes ahead with his rule-of-thumb system and insists that anything the helper thinks of must be wrong."

"That helper is a fool to stay there," said the Sales Manager.

Pays Employe for Acceptable Ideas.

"And he won't stay there," added Reilly. "I almost hate that garageman, he's so darned pigheaded. If a man that works for me can tell me anything about running my business, he finds out quick that I appreciate it. If it's an idea than we incorporate in the business he gets paid what it's worth; and, anyway, he learns we're glad to have suggestions."

"That's fair."

"Fair! It's common sense!" exclaimed the dealer. "No man ever got very high without someone's help. My salesman thought out one of the best little prospect follow-up schemes I ever heard of. A man like Old Grouch back there would have turned it

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down cold, but it's been worth a great deal to me. This putting a damper on your subordinates and setting yourself up as the one big I-know-it-all-and-what-I-don't-know-is-wrong is one of the best ways a man can set out to acquire a millstone about his own business neck."

"We work that system on a sensible basis in our shop. If a man thinks of anything that looks good to him he speaks to Williams about it and Williams thinks it over; some of the things he comes to me about. Maybe he goes back later to get a more complete idea from the man, and they talk it over informally. We haven't a big establishment and don't use a suggestion box, for I don't think we need it; wet get along pretty well as it is. And it is absolutely contrary to Hoyle in our establishment to turn a frosty look on a man with an idea."

"The factory uses the suggestion box."

Suggestions Resented by Predecessor.

"You've got a bigger establishment than I have," argued Reilly, "but," he asserted, "you didn't have much of a suggestion system when your predecessor, Marvo, was sales manager."

"No?"

"Decidedly no! You didn't need it; he knew all there was to be known about selling and everything else. You should have seen the first few sales meetings the Old Man pulled off; they were hot sessions. He used to let Marvo run things pretty much, and while Marvo couldn't very well turn down the Old Man's sales meeting scheme he proceeded to make a bum of it to the best of his ability."

"How so?"

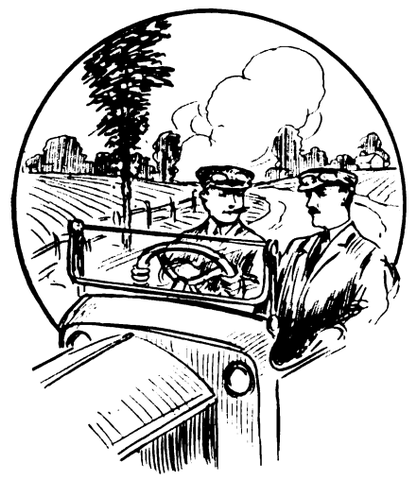
"Well, as a starter, he assumed that he would preside and preside he did. The salesmen were gathered in the directors' room at the factory, and along with them were a few of us dealers. Marvo called things to order, and one or two of the salesmen who were full of ideas and had made good on the outside got up and got their ideas and schemes out of their systems. And every time anything was suggested Marvo proceeded to throw cold water on it. He was the sales manager, in capital letters, too, and not much of anything seemed to make a hit with him. To sum it all up, when the meeting was over there was nothing in particular to show for the trouble. The Old Man always supposed Marvo knew what he was talking about, and therefore the Old Man thought his meeting scheme was a failure.

"But he tried several things after that, and each time Marvo gave them a frost. Some of them the Old Man was sure were good and bye and bye he decided that Marvo knew too much for his own good; that was the first grease on the slide for him, and it is what paved the way for your coming."

"No one ever told me all that about him; of course, I knew they didn't like him very well."

"That was his one big trouble; he was handicapping the Old Man's business. There the Old Man was spending good money to get capable men with brains to work for him, and Marvo was playing just such a game as the old grouch of a garageman back there; he actually refused to let the Old Man get what he was paying for. He was like many more of that ilk; he seemed to be afraid that if he admitted anyone knew more than he did it would affect his standing with the company, or, if not with the company, with himself.

"I don't say he never took up a suggestion, for he did; but he did it in such a darned contemptible way that morally I regard him as a thief. One of the lads in the office—he isn't there now, however—once came along with an idea. Marvo said there might be something in it, but didn't warm up at all, but after letting it lapse for quite a while he broached the thing to the Old Man and it turned out to be quite successful. But do you suppose he gave the lad in the office credit for it? Not much! By the time it was an assured success it was a Marvo idea."



"NO MAN EVER GOT FAR WITHOUT SOMEONE'S HELP," SAID REILLY

"That's a ——— of a way!"

Clever in Purloining Others' Ideas.

"Yes, and what's more, he had another way of getting around it. If he realized that an idea was good and he didn't want the man to know he had thought up something good he would say, 'Yes, I have been thinking of that same thing myself, and we may do it as soon as I get around to it.' He sprung that on me once and it made me so darned mad I could have choked him. I knew when he said it he was lying, and when he put the scheme into effect I was almost tempted to tell the Old Man what I thought of him."

"Huh!" was the Sales Manager's exclammatory and sole comment.

"This idea of taking advantage of the brains of employes is taking a firm hold in the business world to-day and the concerns that are getting to the top and forging to the front are the ones that are willing to accept assistance even from an office boy. It applies not only to corporations but to individuals as well, and in almost any trade or occupation. When Jerry Crandall went down to be general manager for the Cress Mfg. Co. he knew he had tackled a big job. They felt that there was a future for them and they were willing to make it a good thing for any man who could pull things up where they wanted them.

Cashed in on Other Men's Mind Work.

"Jerry started in to dig. He went around the factory and got acquainted with everybody. He got everyone's angle of view on everything and he grabbed at ideas right and left. If a man had a good idea Jerry didn't hesitate to tell him so, and where the old manager had been discarding ideas Jerry collected them. It wasn't long before the men began to class the 'new boss' as a 'good scout,' and the men with ideas began to get promoted.

"Jerry singled out the live ones, and some of the old rule-of-thumb foremen went down the scale or out entirely. He built up a factory organization that was alive from top to bottom and that actually became enthusiastic. He went into the sales work the same way, and the salesmen all began to pull together like a team of horses. The knockers and don't-cares were wiped out and every man became a rooter."

"Crandall must be a pretty good man," commented the Sales Manager.

"He is, and the Cress people know it and they wouldn't let him go if they could pay him enough and avoid bankruptcy. But that isn't the point. Jerry is a good man, but he never got where he is by himself; he had to have help and be willing to be helped. He wanted the men to help him and he was glad to help the men, and he practically boosted himself to where he is on the shoulders of the organization. He could have climbed considerably by himself, but when he got the whole bunch helping him they just shoved him away up beyond what he ever dreamed. He cashed in on other men's ideas—and the other men were only too glad to have him do it."

"That makes me think; I have an idea," said the Sales Manager, as the car rolled up to Reilly's salesrooms.

"Well, keep it until I get back," said Reilly, who climbed out and headed for Mike the Cigar Man's.

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"BOOST INDIANA" TOURISTS LOOK BACK AT THEIR TRIP

One of the Passengers Tells What Left Most Vivid Impressions—Lively Reminiscences of Dust, Mud and 'Dobe.

Those "made in Indiana" tourists are back. And some of them are jolly well glad of it, too. Even those who are not so glad to get back to real civilization again are likely to remember their experiences for many a long day, for nearly every one of those to greet home folks once more have tall tales to tell of mud and of dust and of struggles over prairies and assaults on villanous mountains; some of the experiences were laughable and some were not so laughable, and almost without exception they make very plain the fact that cross-continent touring, even on the easy schedule that was followed, is a strong man's work at best.



LOS ANGELES CLUB AND DEALERS WELCOMING TOURISTS AT OWENSMOUTH

James Rohde of the Eisemann Magneto Co., of New York City, is one of the returned tourists who is a little bit glad he is back on the home heath, for though he had a "bully good time," to quote his own words, he also had some pretty hard times that were not shared by all of those who made up the party; his reminiscences reveal many interesting sidelights on the 4,000-mile trip from Indianapolis to the Pacific Coast. Rohde went along to look after the Eisemann magnetos carried by 11 of the 18 cars in the procession, but he did not have much to do; he took with him a trunk full of repair parts, but he sold them all, down to the last brush, to the Eisemann Pacific Coast dealer, and he is particularly proud of the fact that not one of the 11 instruments, eight of which are American products, manifested the slightest trouble during the whole of the trip. And that the "going" was particularly hard on ignition apparatus is made very plain by his recital of some of the events that took place on the long jaunt.

"What bothered us most?" Rhode reiterated after the Motor World man. "The heat," he answered laconically, and went on:

"We asked a farmer in Kansas the temperature on a particularly hot stretch of road, and he said that when we noticed the grasshoppers roosting in the shade of the telegraph poles it was over 100. But we were not stopping to look for grasshoppers; one way to create a breeze was to keep on going. The heat did not seem to have much effect on the motors unless we travelled with whatever breeze there was; then they commenced to overheat a little. But as long as there was a breath of air stirring and we could head into it, we had no trouble when the roads were level. Further along, on some of the hills, steam was fairly common, though none of the cars had any trouble in climbing the grades.

"When we got up into the real mountains there were few of the gasolene cars that did not lose quite a little power because of the rarified atmosphere, but it did not seem to effect the 'coal oil' car (referring to the Henderson fitted with Harroun's kerosene carburetter) a bit. Harroun would open her up and she'd sail over the hills in great shape and never a puff of smoke from her exhaust pipe. I know, because I rode behind it in the other Henderson.

"After the heat, I think the dust worried us about as badly as anything else. The alkali dust will get through anything I ever saw — goggles, clothes, tightly-covered trunks and all—and if it gets into person's eyes it smarts terribly. When we struck the alkali country it was a case of clean gasolene strainers every night, and sometimes we could not wait until night.

"We struck the worst roads of the trip in Utah and in parts of Colorado where the alkali dust was so thick you could not see your hand before your face if there was another car within a radius of a mile of you. But we did not mind the taste and the feel of the stuff half as much as we did the very effective way in which it disguised the bumps in the road. It filled up all the little hollow spaces between the high spots and made the road appear smooth, and as soon as a car had plowed through it it settled down again to fool the next driver.



MISS C. S. GEARY, SECRETARY LOS ANGELES CLUB, AND ELWOOD HAYNES "UP FRONT"

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"When it was no dust it was mud—beautiful, rich adobe mud that sticks tighter than your shirt on a hot day. I think I've shovelled enough of the stuff and waded around in enough to fill the Panama Canal. Getting into Kearney's Ranch, it took us two hours to travel half a mile; as fast as we put the mud hooks on the tires they ripped off again, and finally we had to fairly build a road out of rocks before we could move at all. We could see the lights of the town and those on the cars that had gotten through, and there we were—marooned for just two hours by the clock.

No Water and Beer 25 Cents a Quart.

"Drinking water is terribly scarce in some of those Western towns and we had a funny experience at Fish Springs. We got a little sulphur water for the radiators, but they would not give us any to drink nor would they turn their backs long enough for us to steal some. Instead they offered us beer—at 25 cents a quart. And we had to take it—warm, too, mind you—or go thirsty. It was in that same town that the price of 'gas' reached the high mark; it was selling for 65 cents a gallon. Back at Kearney's Ranch it was 60 cents.

"The people in the town of Price, in Utah—it's nothing but a little bit of a Western gambling town—were so anxious for us to go through their settlement that the whole town turned out and built a road through the canyon to get us to come in. We were the first and only motorists to go over the road, and we had to look sharp to avoid the empty dynamite cases that strewed the roadway, part of which had been blasted out of the solid rock. That night a cloudburst washed out the road, and now very little remains to show where it was.

Cloudburst Follows Terrific Heat.

"Speaking of cloudbursts reminds me of a 'peach' we ran into just as we reached Thompson, Utah. The heat had been terrific and for hours we had driven with the bonnets over our engines raised, despite the dust. With scarcely any warning, the cloudburst struck us, and I think the deluge was the worst of any I have ever seen; the rain was punctuated by bursts of hail and the road became a sea of mud in no time at all.

"In the mountains the roads were a little better, on the whole, though in nearly every case the turns slanted off and made driving hazardous. In several cases it was necessary to get out and walk beside the car, holding it onto the road with all our strength to keep it from sliding over the edge. Grades? Why, you don't know what grades are in this part of the country. When you have to poke your head out from under the top and get a crick in your back from looking up, I guess that's going some! In Dugway Pass one of the cars could not get up at all, and 40 of the men in the party got on a long rope and towed it up, assisted by its engine. Geared a little too high for that particular hill, I guess, for it had no trouble in getting up all the others. But that piece of grade certainly was a real sticker.

"In every town we struck we were royally treated and even in Kansas, which is supposed to be dry—very dry!—nobody had any trouble to get a drop of the stuff that cheers. There was always one room in the hotel that had a bath in it filled with cracked ice and bottled Budweiser. Not even the presence of Governor Hodges had any effect on that feature. I don't know who was responsible for it, but it certainly looked good to us.

When Escorts Made Selves Nuisances.

"Sometimes the welcome we got proved embarrassing, and in not a few cases the would-be escorts that came out to meet us got to be real nuisances. We were glad to have local motorists follow along behind us into their home towns, but they always wanted to lead the procession. Which was all right as long as they did lead. But when one of 'em got a blow-out or a puncture and stopped to repair it, he was always determined to regain his original position in the line, and the chances some of them took on those mountain roads would turn one's hair grey. Three or four bad accidents resulted from just such tactics.

"We had a great trip all the way through, and it really surprised me the way the tires stood up under the strain. In Kansas, where the heat was greatest, blow-outs were fairly frequent, though on the rough mountain roads we had very little trouble by comparison."

To-morrow (Friday) night the tour will be lived over again by nearly all of those who took part in it, for the Indianapolis Chamber of Commerce, the Board of Trade, the Commercial Club and the Hoosier Motor Club will give a joint banquet to those who rode in the cars, when they will be told nice things about themselves and generally boosted in turn for the boosting they have done for Indiana and Indiana-made products.

Possible Danger in Cowl Fuel Tanks.

With the present tendency toward the adoption of fuel tanks contained within the skuttle dash, there is room for slight danger at least of confusion in refilling tanks and radiators, and while it is conceivable that gasolene might serve as a fairly good cooling medium—albeit a rather expensive one—water certainly will not serve as fuel. It is true that the two filling orifices may be and generally are quite a distance apart, though it will do more good than harm to warn garage attendants which is which.

Ohio Law for Protection of Carriers.

Automobiles left standing at the curb in Ohio cities will be pretty safe from molestation if the Fellinger law, which went into effect last week, acts as any sort of a check on small boys and others whose delight in the past has been to see how much they could "monkey" with a car without getting themselves into trouble. Not only does "stealing" a car carry a good, stiff penalty, but so much as picking off a metal monogram—any part, in fact—means from three to six months in jail or a fine of from $100 to $500.

Tinkering with the gears or the starting device is made punishable by a sentence of from 30 days to six months or a fine of from $50 to $100, and under the same penalty are included these prohibited things:

Cutting, marking, scratching or damaging any part of a motor vehicle, top, robe, covering or upholstery.

Destroying with liquid or other substance any part of a motor vehicle or its appurtenances.

Draining or starting the drainage of the radiator or oil tank of a motor vehicle.

Putting a metallic or other substance or liquid in the radiator, oil tank, carburetter, grease cup, oilers, lamps or machinery of a motor vehicle with intent to injure or impede its operation.

Tightening or loosening any connection of a motor vehicle.

Releasing the brake of a standing motor vehicle with intent to injure the machine.

Parking Forbidden in Michigan Avenue.

The problem of what is to be done about parking cars in Michigan avenue, Chicago, still disturbs automobile and municipal circles, and in view of a new order to the effect that cars cannot be parked in the center of the street after Saturday, 16th inst., the would-be solvers of the problem are unusually busy. Those who drive downtown to their offices used to park their cars wherever they could, but several months ago the police commissioner was responsible for an order that all cars be parked in the center of that broad thoroughfare.

Then, a few weeks ago, it was proposed to build a subway garage that would accommodate 2,250 cars, but the South Park Commission did not approve the project; the Chicago Automobile Club then offered to build part of the garage, but the offer has not been accepted, and now the authorities have issued the anti-parking order, which is likely to work a hardship on business men who own cars.

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PUSHING THE PISTON PIN INSTEAD OF HAMMERING IT

Adjustable Appliance for Moving Wristpins Without Danger of Damage — For Solid or Hollow, Large or Small Pins.

Many jobs that are encountered in the process of repairing and overhauling an automobile require the use of a hammer, and in doing them the hammer is the essential tool. There are not a few other jobs, however, where the hammer is used not because it is the proper tool or the best tool but because it is the most convenient one.

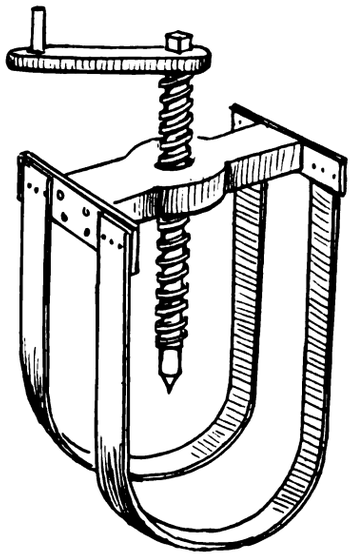
For such work as removing the piston pin from a piston the hammer is not the proper implement to use, despite the fact that it is the tool that is commonly employed for the purpose. A piston is a mighty delicate thing, as a matter of fact. Not only is it finished with a great deal of care, and not only does a great deal depend upon the preservation of its accuracy, but it is made of cast iron, which is notably brittle and is decidedly susceptible to injury from the blows of a hammer. It is not necessary that the piston be struck directly to cause it to crack more or less seriously; the blows struck when driving out a rather tight piston pin are quite capable of starting a crack under conditions favorable to such a disaster.

The accompanying illustration shows a simple and thoroughly satisfactory method of making a piston-pin pusher that will answer for any piston within a reasonable range of sizes. Like many other special appliances, it can be varied a good deal in constructional details, without, however, making any change either in the principle of operation or in its usefulness.

Where the pin-pusher is to be used in a repair-shop, where it is likely to be subjected to considerable wear and tear, the heavy crosspiece and the screw should be of steel, though for the occasional use of an owner who does his own work, wrought iron is quite good enough. The diameter of the screw for all-round service should be about five-eighths of an inch and the crosspiece should be of a thickness at least equal to the diameter of the screw and should be enlarged by "upsetting" in the middle to avoid weakening by the drilling of the hole.

The two flexible bands which cradle the piston should be of heavy spring steel about five-eighths of an inch wide, riveted to short steel spreaders fastened by screws to the ends of the cross-piece. The spreaders should be long enough to allow clearance between the bands for the passage of the largest piston pin that will be operated upon. The screw must be of sufficient length to push the longest pin almost through; a little block of wood can be used for the last inch or so, if necessary. The inner end of the screw should be flat and square and drilled to take a pointed center similar to a lathe center. The center need not be removed ordinarily, for in the case of a hollow pin it will usually go into the hole, and in the case of a solid pin its point will enter the lathe-center in the pin end.

If the appliance is made for use on one engine only the flexible steel bands need be made only long enough for the pistons of that engine and the screw may be made with a flat end or with a permanent point, according to the design of the pins of the particular engine. For that matter, the affair can be greatly simplified, when only one size of piston is in view, by using a single wide band of ordinary flat, thin iron with a hole for the piston pin to pass through, instead of two steel ribbons, and a much shorter cross-piece with a plain hole in it and the screw, which may be a common bolt with a long thread, working through a nut held against the under side of the cross-piece by the pressure of the screw itself. A wrench on the bolt-head may take the place of the crank; the crank, however, very greatly reduces the time required for removing a pin.



SIMPLE PISTON PIN REMOVER

The pin may be pushed back into place by the same appliance if the bands are made sufficiently long; it should be started as far as possible by being worked in by hand, so that it will go straight and true when the screw is applied. While it may perhaps seem an unnecessary caution, it will do no harm to suggest that the set-screws or other retaining devices should be well out of the way, both when removing and when replacing a piston pin.

WINNIPEG TRACTOR TRIALS MAKE ALL ENTRANTS HAPPY

All Entries Win Prizes in Microscopically Divided Classes — Gasolene and Kerosene Machines Worsted by Big Steamers.

It may be that manufacturers of agricultural tractors are so busy taking and filling orders that they are able to give but scant attention to such matters as competitions and trials; it may be that they do not consider the game quite worth the candle, and therefore elect to eschew it; it may be that the public, or at least that portion of the public which is expected to take a deep interest in agricultural tractor demonstrations, is stingy in evincing its appreciation; or it may be that there is some other reason or combination of reasons of a nature unfavorable to the holding of trials of power and efficiency between the big machines that are doing so much to reduce the cost of farming on a large scale.

However that may be, it is a fact that this year's tractor competition at Winnipeg, an annual event that has become a sort of classic in its particular field, attracted fewer entries than either last year or the year before. There were but 19 competitors this year as against some 30 machines shown last year, and only three firms entered as against 12 last year. It may be said, however, that a few of last year's tractors were merely run and operated as demonstrators, not entering the competitions, and in two cases the same machines contested in both gasolene and kerosene classes.

The three concerns this year represented were the J. I. Case T. M. Co., of Racine, Wis.; the Avery Co., of Peoria, Ill., and the Sawyer-Massey Co., of Hamilton, Ont. The Holt caterpillar, the four-wheel drive Heer, the Rumely Oil Pull, the Pioneer "limousine," the four-cylinder Diamond T, the American Gas tractor, the Gould, Shapley & Muir, the Aultman Taylor, the one-wheel-drive Hackney, all of which served to enliven the 1912 competition, were among the absent. And it is no less disappointing that so far at least as the official reports are concerned, there were no representatives of the small motor plow doing the work of one or two horses—a type of machine that certainly has been brought to a state of development where it might be expected to figure in competition and which makes an appeal to hundreds where the big, costly machine is financially visible only to scores.

The competitors were segregated into three divisions, for gasolene, kerosene and steam machines, respectively, and each di-

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vision was subdivided into three classes graduated according to horsepower. As there were separate prizes for each class of each division, it is reasonably clear that there was but little opportunity for any machine entered to get away without a prize of some sort, and, as a matter of fact, every maker who competed won premier honors in something or other—a state of affairs that makes it seem a little surprising that more manufacturers did not make bids for the numerous medals and diplomas hung within such temptingly easy reach.

Steamers Make High Scores.

While a list of the winners in the various classes is little more than a rearranged list of entries and conveys no useful information, the data obtained from the trials and compared irrespective of power or class is of some interest. Strange to say, the steam machines made the best showing on total points, a Case tractor with a single huge cylinder of 12 inches bore and 12 inches stroke having accumulated 437.30 ponits out of a possible 500, while a double-cylinder steamer of the same make ranks second with 406.7 points. Third and fourth also went to the steamers, the machines being another Case and a Sawyer-Massey, respectively. Last year the kerosene class led the whole field, with gasolene a close second and steam a good third.

A little investigation of the penalizations of the internal combustion engined machines brings to light the fact that many points were lost for reasons that do not necessarily impair the real value of the machines. For instance, a gasolene tractor was penalized 100 points for stopping after the test had commenced. In the plowing test many points were sacrificed for having plows out of the ground too long and for lack of sufficient water for a continuous run of eight hours.

Among the internal combustion tractors, excluding the steamers entirely, the gasolene machines ran one, two, three, a Sawyer-Massey taking first and Avery machines second and third. The scores were close, however, the leading gas tractor having 359.05 points, the second 355.55 and the third machine 352, while the Case kerosene machine, which ranked fourth in the internal combustion group, had 338.4 points.

Computing the Cost of Plowing.

The steam machines scored again, and handsomely, in the cost of fuel per acre plowed. Again ignoring horsepower classifications, the best record was made by the same big Case machine that won on total points, its fuel cost amounting to 37 cents per acre plowed, and the second place in point of fuel cost was taken by the Case that was second in total points, with 37.4 cents per acre. A Sawyer-Massey was third with 42.8 cents and another Case fourth with 43.6 cents per acre. Two kerosene machines were fifth and sixth; both were Case tractors, and the figures were 43.8 cents and 45.8 cents per acre, respectively. An Avery gasolene machine with a four-cylinder motor made the best showing in its division, its cost for fuel amounting to 46.5 cents per acre plowed. Of course, the cost figures have only a comparative value, for it is clear that local fuel prices must govern in such matters. The scores are based on a cost of coal of $8 per ton of 2,000 pounds, for gasolene of 27 cents per gallon of 7 pounds and for kerosene of 14.5 cents per gallon of 7.9 pounds. While the liquid fuel prices appear high, it must be remembered that they are for the Imperial gallon, which contains 160 fluid ounces as against the 128 fluid ounces of the American gallon.

Mechanical Troubles Are Few.

Quite a strong light is thrown on the progress that has been made in the matter of reliability by the fact that on the score sheet there are comparatively few penalizations for mechanical troubles. In the column devoted to carburetter and ignition troubles, for instance, there is but one entry, and that not a heavy one, indicating that the makers have succeeded in eliminating what once were the most serious drawbacks. There were more penalizations for variations of speed and for vibration than anything else, the judges evidently having rather firmly fixed opinions on such matters; but for the most part the penalties inflicted were trifling. Only four cases of bearing trouble were penalized, and three of these were in the steamers. The steamers and the kerosene burners ran about equally in the matter of points for vibration, while the gasolene machines averaged better than either of them. The fact that there were several four-cylinder motors in this division of course had its effect in the matter of vibration.

Enormous Weights of Tractors.

Two-cylinder motors predominated in the internal combustion divisions, there being five of them in the gasolene classes as against three "fours," and four in the kerosene classes against a single "four." Four of the six steamers had single cylinder motors, the two double cylinder machines having compound engines. Big cylinders and slow rates of revolutions per minute were the rule, as might be expected in such machines. The smallest cylinder in the lot measured 6½ x 7 inches bore and stroke, respectively, this being the dimensions of the two-cylinder motor of the 15-horsepower Case, while the 30-horsepower machine of the same make has cylinders of 10 inches bore and 12 inches stroke, and the huge Sawyer-Massey steamer, which is rated at 35 horsepower, has one cylinder of 12 inches bore and 14 inches stroke. This big machine runs at only 230 revolutions per minute, while 600 revolutions per minute is the maximum rated speed of the lightest of the motors.

While it is not expected that an agricultural tractor should be particlarly light, the weights of some of the machines are a little amazing. The 12- and 15-horsepower gasolene tractors are comparatively reasonable in weight, scaling 5,600 pounds; the 20-horsepower machines, however, run up to 12,000 and 14,000 pounds, the 30- and 40-horsepower weigh over 24,000 pounds, or 12 tons, while the two largest steamers weigh 39,000 and 40,000 pounds, respectively—20 tons! Yet the steam engines of the last two are rated at about 35 horsepower.

The competition was held in connection with the Winnipeg Industrial Exhibition. The judges were J. B. Davidson, L. J. Smith and H. W. Riley, while the engineer in charge of the trials was L. W. Chase.

Bablot Victor in French Grand Prix.

Driving a Delage car, Bablot won the French Grand Prix race which was run over the Le Mans circuit in France on the 5th inst., his time for the 330 miles being 4:21:50, which is at the rate of 76.98 miles an hour. Albert Guyot, who finished fourth at the wheel of a British Sunbeam in the last 500-mile Sweepstakes race on the Indianapolis Speedway, was second to Bablot, at the wheel of another Delage, his time being 4:26:30, or 75.40 miles an hour, and Pillette, who was fifth in the 500-mile race in a Mercedes Knight car, finished third in a Mercedes; his time was 4:27:53, which is at the rate of 75.38 miles an hour. The next three places were won by Salzer (Mercedes), whose time was 4:34:53; Duray (Delage, whose time was 4:35:03, and Lautenschlager (Mercedes), whose time was 4:36:51.

Although 16 cars were scheduled to start, the two Peugeot entries, which were to have been driven by Bilot and Guyot, were withdrawn at the last minute, for which no reason has been made public, leaving only 14 to start. The eight cars not previously mentioned were three Schneiders, all of which were eliminated by broken pistons, two Excelsiors and one each Opel, Brazier and Benz. As was the case with the road race over the Amiens course that was won by Boillot, the amount of gasolene was restricted, and if present plans are carried out the number of tires allowed each contestant will be prescribed by the officials in next years' race; it is proposed to limit each entrant to seven tires, including the four on his car.

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COOPER AND HIS STUTZ TAKE SANTA MONICA RACE

Cover 445-Mile Course at 74-Mile-an-Hour Pace—Oldfield and Nikrent, in Mercers, Follow Him Home —Crowd Mars Finish.

Over a winding eight-mile course well lined with eager spectators, Earl Cooper, at the wheel of a Stutz car, easily won the Santa Monica road race in California on Saturday last from a field of 14 starters; he completed 53 laps of the course, which in exact figures measures 8.417 miles, making the total distance 445.2 miles, in 6:01:52, which is at the rate of 73.86 miles an hour. His time, therefore, is considerably slower than the time made by Tetzlaff last year, when he rounded the course 36 times in a Fiat at an average rate of 78.5 miles an hour for the 303 miles. Barney Oldfield, who attempted to come back last year in the same race, came back to better purpose on Saturday; he finished second to Cooper with a Mercer in 6:07:45, and Louis Nikrent in another Mercer was third in 6:28:17.2.

The race that was won by Cooper was the only one that thrilled onlookers. The two light car races—one for cars between 101 and 230 cubic inches piston displacement and the other for the next larger sized engines having between 231 and 300 inches displacement—were abandoned chiefly because of lack of entries, though they scarcely were missed because of the much greater distance travelled by the big cars, which were driven under class E free-for-all rules.

Promptly at 9 o'clock in the morning the first of the 14 starters was sent away and the others followed at 10-second intervals, the complete list of starters and the order in which they started being as follows: Gaston Morris (Mercer), Harris Hanshue (Apperson), Barney Oldfield (Mercer), Theodore Tetzlaff (Fiat), Louis Nikrent (Mercer), E. F. McConners (Speedwell), Dave Lewis (Stutz), Earl P. Cooper (Stutz), John Ophsahl (Buick), Charles Soules (Cadillac), Frank B. Goode (Apperson), T. J. Beaudette (Cadillac), Frank Siefert (National), Frank Verbeck (Fiat).

From the first lap it became apparent that the race would be won in close to record time, and before the lap was finished the gruelling pace set by the leaders told on the engine in Lewis's Stutz and the car was withdrawn. Soon after the sixth lap, Siefert in his National worked himself up into the first position, pushing Cooper and Oldfield back to second and third, respectively, but his triumph was short-lived, for by the time 100 miles had been covered Cooper had regained his place and thereafter Siefert dropped way back. A little later, his National caught fire and was withdrawn, and almost immediately afterward Hanshue's Apperson also blazed up and was taken out of the race. Oldfield then was second, about two minutes behind Cooper, whose time for the 100 miles was 1:18:15.

In the 15th lap Oldfield raised the hopes of his host of followers by nosing out Cooper for first place, but Cooper, who lost little time in making tire changes, soon regained the lead and never lost it again. At the 200-mile mark Oldfield still was second, some five minutes behind Cooper, who was clocked for the distance in 2:57:02, and Goode, who had been driving a consistent race in his Apperson, was in third position. This was the position held by the three leaders up to the 47th lap, when engine trouble put Goode out of the race and Nikrent, who had been driving "wide open," came up from the rear and slid into his place. Tetzlaff, who had been looked upon to do great things, in view of his two previous victories, never was a serious contender and quit at the 200-mile mark.

At the end of the 40th lap, or 336 miles, Cooper still held onto his lead, his time for the distance being 4:32:34⅘, with Oldfield second, three minutes behind him, and Goode three minutes behind Oldfield. Morris (Mercer) and Ophsahl (Buick) quit soon after the 40th lap, leaving nine cars still in race, and of these nine, only Nikrent's Mercer was within 10 laps of the leader.

Six laps from the finish Oldfield, who had stopped at the pits for tires, had dropped two minutes further behind Cooper, who still was in the lead; Nikrent was trailing along behind the redoubtable Barney, and this was the order held until the finish. Immediately after Nikrent crossed the finish line, the great crowd of spectators, too long held in check by the guards, surged across the course and made the going so hazardous for both drivers and spectators that the race was called off and the survivors flagged.

Cooper's Stutz and both the Mercers driven by Oldfield and Nikrent were sparked by Bosch magnetos and fired with Bosch plugs, as were eight of the other 12 cars entered; both Cooper's Stutz and Oldfield's Mercer were shod with Firestones.

Organize Against Car in St. Louis.

Because the automobile is regarded as having "got the horse on the run" in St Louis, Mo., a $250,000 corporation has been formed in that city to take over practically all the undertaking and livery establishments in town and endeavor to check the inroads of the motor car on the horse-drawn vehicle livery business. Former State Senator Collins, who owns three undertaking establishments, is one of the organizers.

PECULIAR CONTEST TANGLE CANCELS WISCONSIN RUN

Manufacturers' Failure to Register Stock Cars Prevents Dealers Getting What They Want—Substitute Offer Refused.

The reliability contest which was to have been started from Milwaukee on the 25th inst. by the Wisconsin State Automobile Association is all off, and thereby hangs a tale. It is off because the Contest Board of the American Automobile Association could not, if it would, issue a sanction for the event, all of which hinges on the failure of manufacturers to list with the A. A. A. their stock models. Because last years' tour, which was run under Grade III reliability rules, was easy and because something harder was desired by the dealers, sanction was requested for an event to be run under Grade I rules, which are for registered stock cars and which provide penalties for time and work and for failures disclosed by a final technical examination, and for pretty nearly everything else that is not "just so." But—and here's the stumbling block—no stock cars have been registered with the Contest Board of the A. A. A. and so no sanction could be issued. In lieu of the Grade I sanction, Chairman Schimpf offered a Grade III sanction, but this the dealers refused. Consequently the event has been killed by indefinite postponement, and although the A. A. A. is hardly to blame, there is some talk of "seceding."

Green and White in Connecticut's Tags.

Green and white are the colors to be used on Connecticut's license tags for 1914, Secretary of State Albert Phillips having placed an order for 30,000 of the new automobile appendages; they are to be three inches shorter than the 1913 tags and will have the letters "Conn" placed vertically at the left of the number and "1914" in the same position at the right of the number. "C" as an insignia is not used. Pleasure cars will have white letters on a green background and commercial cars green letters on a white background. Manufacturers' tags will have green letters on white with an "M," dealers' tags the same, but with a "D," and livery cars the same but with an "L."

Cars Prizes for Suspenders Jobbers.

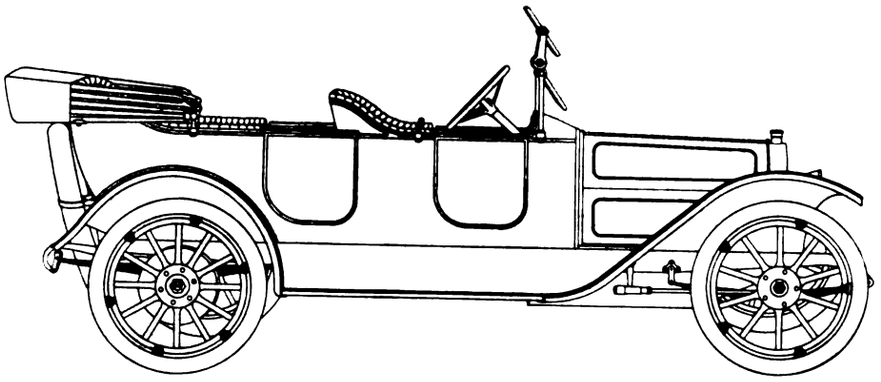
Six jobbers in the C. A. Edgarton Mfg. Co.'s suspenders, who lead in sales July 10, 1914, will receive automobiles as prizes, the winners to head six different classes; the order for the cars has been secured by the C. T. Silver Motor Co., Overland dealer in the metropolitan district.

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BOTH "FOURS" AND "SIXES" IN BIG AND LITTLE OHIOS

Four Models that Range from 35 to 80 Horsepower—Left Drive and Center Control in Three Larger Cars.

Ample opportunity for selection is afforded in the well-balanced series of Ohio cars brought out by the Crescent Motor Co., of Cincinnati, Ohio, which includes two "fours" and two "sixes," a big and a little car of each type. While there are naturally some differences between the various models such as are incident to the different sizes and powers and to the different numbers of cylinders in the motors, the main features are alike throughout the line. All the motors are of the T-head design and all have long stroke-to-bore ratios. The unit power plant system has been adopted, with shaft drive to the rear axle, and the body lines are worked out in the same general way throughout the line.



SIDE VIEW SHOWING LINES OF OHIO "4-50" TOURING CAR

The two four-cylinder cars are designated, according to horsepower and number of cylinders, as the "4-35" and the "4-50"; similarly the "sixes" are called the "6-60" and the "6-80." All are five-passenger touring cars, with the exception of the "big six," which has a seven-passenger body, and all except the "little four" have left steer and center control. Both the "fours" have three-speed gearsets and both the "sixes" four speeds and all, it almost goes without saying, are selectively controlled. All the motors—or, more correctly speaking, the unit power plants—are suspended directly from the main frames on the the three-point system, which protects the power plants from the effects of twisting or weaving of the frames when the roads are rough.

All rear axles are of the full floating type and the shafts run on annular ball bearings. Long, thin-leaved semi-elliptic springs are the suspension members in all models; in the "fours" the front springs are 40 inches long and the rear springs 54 inches long. The springs are nearly flat, so that the maximum play of the leaves is available for the absorption of road vibration. The easy riding qualities of the springs are assisted in no small degree by the large tires, the smallest "four" having tires 34 x 4 and the larger "four" 35 x 4½, while both the "sixes" have 4½-inch tires, but the "little six" has 35-inch wheels and the "big six" 36-inch wheels. The wheelbases of the "fours" are 116 inches and 122 inches, respectively, and of the "sixes" 132 and 138 inches, respectively.

All the motors, as already has been mentioned, are in the long-stroke class and each one is especially adapted for its particular work. The smallest "four," rated at 35 horsepower, has a bore and stroke of 4¼ x 4¾ inches, and the larger "four," which is rated at 50 horsepower, has a bore and stroke of 4½ x 5¼ inches. In the "sixes" the stroke is the same in both engines—that is, 6 inches; the bore is 4 inches for the "little six" and 4½ inches for the "big six." Block casting of the cylinders is employed for the "6-60," while the cylinders of the "6-80" are cast in pairs.

All models are liberally equipped with the various things that the owner is more or less certain to need or to want if he does not get them with his car. From the smallest car to the largest electric lighting and starting systems are installed, the Jesco dynamo-motor being used in conjunction with the Willard storage battery. The mohair tops have covers and Jiffy curtains, and in the larger models the curtains are housed, when not in use, in pockets at the front, which makes a very neat and convenient arrangement. All wheels are fitted with demountable rims, those on the larger "four" and on both "sixes" being Firestones, and each car carries an extra rim. Tire holders are attached to the rear of the body. Roomy tool boxes are supplied with a good assortment of the usual tools that are found necessary and, of course, tire repair outfits, jacks, etc. Speedometers are standard equipment, and also rain vision and ventilating windshields, which are attached without unsightly stays or other awkward supports.

The body finish is either Brewster green or royal blue, at the option of the purchaser, while the sheet metal parts, such as hood, fenders and the like, are black. Bright metal parts are finished in nickel. The upholstering is executed in genuine leather, stuffed with really good hair, and is ten inches deep.

The prices are $1,275 and $1,750 for the "little four" and the "big four," respectively, and $1,985 and $2,485 for the "little six" and the "big six," respectively, including electric lighting and starting system and full equipment.

Bloods of Kalamazoo to Make Cyclecars.

Blood Bros., of Kalamazoo, Mich., who manufacture universal joints and other automobile parts, are preparing to engage in cyclecar production. They will not only make a complete vehicle, but also supply cyclecar parts to all comers.

The Kalamazoo vehicle will mount a Spacke two-cylinder 7-9 horsepower engine and will employ a combination friction and bevel drive, incorporating some exclusive features which have been worked out by the Bloods. The car will have a wheelbase of 96 inches, 36-inch tread and 28 x 3 tires. It will be fitted with tandem seats with wheel steer in front, will weigh less than 400 pounds and will be priced in the neighborhood of $375.

Cyclecar manufacture, however, will not be strange to the Blood brothers, as in 1903 they produced about 100 of such vehicles, which were sold by the Michigan Automobile Co., of Kalamazoo. The car was styled the Little Michigan and utilized a four-cylinder, air-cooled engine, chain drive and wire wheels. It had a tread of 36 inches, wheelbase of 54 and tires 2 x 28.

McClintock Has New Type of Engine.

The McClintock Engine Co., of Detroit, which last week secured a $200,000 Delaware charter, purposes locating a plant in Detroit for the manufacture of a new type of gas engines for automobiles, the nature of which, however, is not public property. The principals of the company are Chas. D. McClintock, Francis C. Osborn and G. Edgar Allen.

Sternberg Doubling its Factory Capacity.

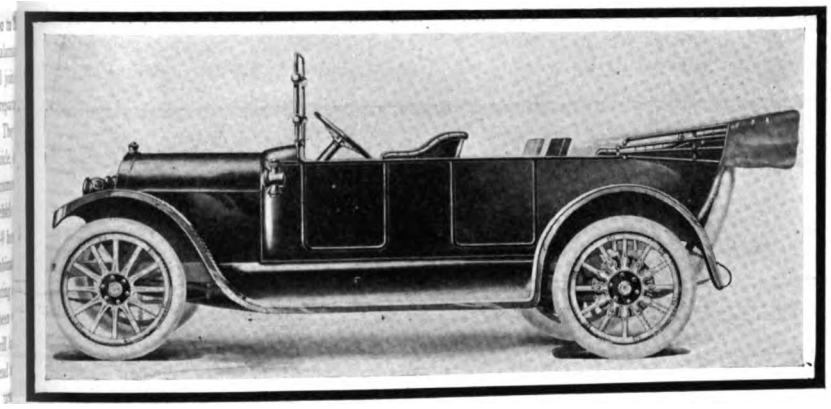
The Sternberg Mfg. Co. of Milwaukee, maker of the truck of that name, has purchased ground for a $50,000 addition to its plant at 46th avenue and Burnham street. It is expected that the enlargement, which will be completed by October 1st, will double the Sternberg working force and output.

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EVERLY DESIGNED MOTOR IN PARTIN-PALMER CAR

ock Cylinders Integral with Top of Crankcase—One-Piece Head, Cageless Valves and Water-Cooled Exhaust.

Fortunately for everyone who has anying to do with automobiles, whether it be aking profits from them or spending oney for them, the days have gone when achines were built around single ideas that is to say, when a man would conceive



FIRST PRODUCT OF PARTIN-PALMER FACTORY, THE "38"

n idea, materialize it in metal with the itmost care and then hastily and carelessly uild the rest of the car around that idea, roducing a machine that rarely was of any alue and usually had a brief existence. The nowledge of good and evil in mechancal matters now is so thoroughly dissemnated that ignorance is hard to tolerate. Having said which, it is in order to state hat, while the Partin-Palmer "38" is far, ar from being a one-idea car, or even a wo- or three-idea car, for that matter, its motor is of rather particular interest, not because it defies precedent, which it does not, but because in it novel means are adopted for carrying out principles that have been proved and tried in actual service, not once, but many times.

The Partin-Palmer car is the first product of the Partin Mfg. Co., of Chicago, and only the first; others are to follow, as already has been stated in Motor World. The factory located in Detroit is devoted to the production of this one model, however, which is a six-passenger touring car with a motor of 38 horsepower, a wheelbase of 115 inches and a price of $975.

The motor that forms such a conspicuous part of the car is of the overhead valve type, with unusual features in the valve arrangement, and has its cylinders cast en bloc, and they, too, have their unusual features. Not only are the cylinders in a single casting, but with the cylinder block is cast the upper half of the crankcase. The number of parts is reduced by this construction and the cylinders and crankcase are absolutely rigid in their relation and there are no connecting bolts or studs to loosen and give trouble.

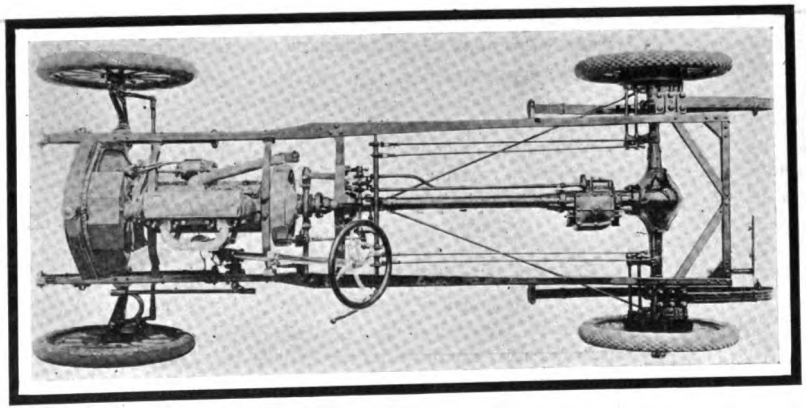
In the overhead construction the same idea of reducing the number of parts and increasing the strength of those that remain is carried out. As might be expected from the combination of the cylinders with the upper crankcase section, the upper ends of the cylinders are left open and the heads bolted on. A single casting serves to cover all four cylinders, however, and owing to the stiffness of both cylinder and head castings a small number of bolts is sufficient to do the work. The joints are made with copper-asbestos packing rings having a resistance of some 3,000 pounds per square inch.

Not only are the heads formed in a single casting, but the cages commonly employed to carry the valves where overhead valves are used are eliminated by forming the valve seats directly in the head casting. Both intake and exhaust passages are cast in the head section. The head and the valves are thoroughly cooled by the water jackets with which they are surrounded, and the exhaust manifold also is jacketed, to the minimizing of back-pressure and noise in the escaping gases. It is a comparatively simple matter to remove pistons and connecting-rods through the open-ended cylinders. The removal of the common head is facilitated by the fact that the water connection is bolted on; by removing the bolts from this connection the radiator and other water joints need not be disturbed.

Other details of the motor are carried out in a more conventional manner, though the three-bearing crankshaft is made a little unusually heavy, being 2 inches in diameter at the front bearing, 2 7/64 inches at the middle and 2 9/64 inches at the rear bearing, where the strain is greatest. The lengths of the three bearings are 3 inches, 2½ inches and 3 11/16 inches, respectively.

The method of casting the cylinders and heads is very favorable to the thermo-syphon system of cooling, which therefore is employed. Lubrication is effected by a constant circulation system and by splash, the latter being adjustable. That the circulation of the lubricant is decidedly active is evidenced by the fact that the pump, under average working conditions, will move 1½ gallons of oil per minute. Ignition is by a dual system, a Briggs magneto being the source of current.

The material used in the construction of the body is alumnoid steel, which means that steel plates are covered with a heavy coating of aluminum. The result is a combination of many of the desirable features of both metals. There really is ample room for the six passengers the car is designed to carry. Two must sit, of course, in auxiliary seats, and these are 15 inches wide and 14 inches deep, with automatic catches for the legs; they fold under the front seat, out of the way, when not in use. Doors are 20 inches wide, giving plenty of room to get in and out. The arrangement of the front seat and the steering wheel are such that



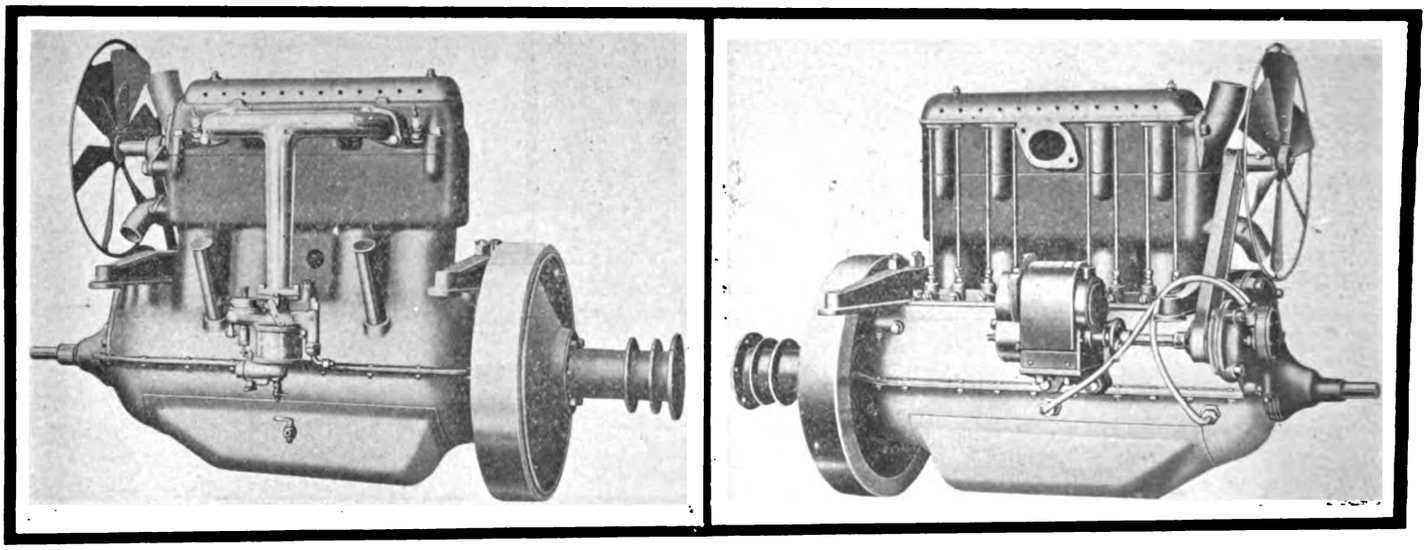
PARTIN-PALMER CHASSIS, SHOWING CLEAN DESIGN

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the driver can get out of his place without difficulty—which is not always the case in a car of moderate dimensions.

Center control of the three-speed selective gearset is the appropriate accompaniment of left steer. Other items of the power transmission system include a leather-faced cone clutch, the usual propeller shaft and bevel gears and a three-quarter floating rear axle. The car is suspended on semi-elliptic front and three-quarter elliptic rear springs. The brakes, which act on drums 14 inches in diameter, are of the internal expanding variety.

Electric starting and lighting equipment are not included in regular equipment, but will be fitted to the car, either before or after purchase, at a moderate advance in price. Regular equipment includes mohair top and top cover, curtains, windshield, speedometer, Prest-O-Lite tank, gas headlights, oil side and tail lamps, an extra demountable rim, rear tire carriers, horn, robe and foot rails and the usual tools and tire outfit.



INTAKE AND EXHAUST SIDES OF MOTOR USED IN PARTIN-PALMER CARS, SHOWING OVERHEAD VALVE ENCLOSURE

More Motors Coming from Milwaukee.

The Davis Mfg. Co., Milwaukee, which produces motors for commercial vehicles, tractors, etc., has purchased a seven-acre site in West Allis, a manufacturing suburb of Milwaukee, on which it immediately will begin the construction of a $150,000 motor plant, 250 x 290 feet. It will be the third factory which the Davis company has erected in 10 years.

Semi-Turbine Engine Looms up in St. Louis

The American Semi-Turbine Motor Co. has been organized in St. Louis and will locate in the Roe building in that city. It purposes producing a new type of automobile engine, the nature of which is indicated by its title.

DEPARTMENT STORE TO TELL HOW TO SAVE TIRE MONEY

New York Establishment to Engage in "Semi-Philanthropic" Work — Tuitionless "School in Tire Repairing and Upkeep."

That department stores are progressive in their adaptation of modern merchandising ideas is well known, and department managers are kept busy thinking up new things, one of the latest of which is an automobile tire service department and which has been installed in the Gimbel Bros. store in New York City. The aim of the store is to render assistance to the motorist in a manner not surpassed by those who specialize in tire selling, and to make the owner a tire repairman if he so desires.

Of course, the store will hardly undertake to set itself up in the repairing and vulcanizing business, but aims, rather, to equip the car owner with a foreknowledge which will enable him to get the greatest satisfaction from the tires he buys of Gimbels. As the prime mover in the scheme, Harry S. Twitchell, of the Goodyear Tire & Rubber Co.'s service department, has been assigned to the Gimbel tire and tire supply department and is acting as the medium between the store and the public.

The store classes its new feature as a "school for tire repairing" and states that "we have organized a section of our business to render valuable service to automobile owners who want to secure longer service from the tires and who wish to learn to do their own repairing in the quickest and most efficient manner.

"We also have engaged an expert tire man to tell the motorists who are interested exactly how to get the longest mileage out of their tires; how to protect and repair them in the quickest manner when they are damaged on the road and in the most thorough manner when they are at home. This service is entirely without charge and will save the careful motorist many dollars in repair bills and greatly lengthen the life of his tires."

Here's the "Non-Skid" Dancing Shoe.

The "non-skid" idea has laid hold of the shoemaking fraternity—or else it has been brought to their notice by the rubber people—and the result is that rubber plugs and patches are being inserted in the soles of dancing shoes to prevent "side-slipping" and other involuntary antics on the glassy floors. If dancing becomes any more violent than it is at present it seems more than likely that rubber plugs will have to give way to regular chains.

To Keep the Dashboard Cool.

There are some cars in which the rear cylinder of the motor is so close to the dashboard that the latter becomes too warm for its own good and for the comfort of the occupants of the front seat. Considerable relief can be obtained by covering the dashboard on the motor side with asbestos millboard, leaving a little air space, if possible, between the lining and the dash. Usually it will be unnecessary to cover the whole board, unless the heating is very pronounced.

Grit for Grinding in Valves.

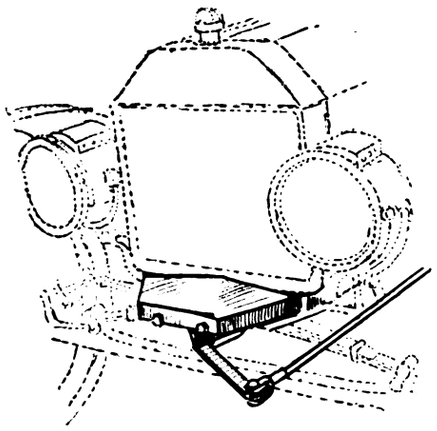
An excellent abrasive for valve grinding is the "sludge" deposited in the bottom of a grindstone trough. It is less sharp than emery and carborundum, but is excellent for valves that do not need a great deal of cutting down and for finishing work.

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[ECHANICAL STARTERS WITH MUSCULAR POWER

ong Levers and Powerful Pedals That Permit Economical Application of Energy—Starting From Seat a Feature of Mechanical Crankers—Automatic Devices Eliminate Trouble From Back Kicks.

A long time will elapse before machinery displaces muscle completely; the achines "that do everything but think" ill require the direction of the human will through the intermediary of human muses. And until Luther Burbank or Jules erne or some other theoretical or practical wizard succeeds in producing a real echanical man, brain, will-power and all, onditions are likely to remain unchanged. When that mythical mechanical man does ee the light of day, it is not unlikely that ome 20th century automobile engineer will orner his services, and it no longer will e necessary to say or to think when an utomobile engine shall be started or topped. In the mean time, there is the mechanical engine starter, which is a



DETROIT MECHANICAL STARTER

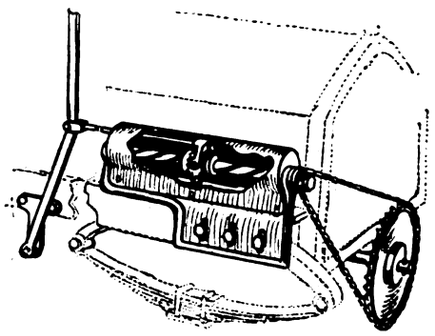
mechanical man directed by the brain of the man behind the steering wheel. The man behind the steering wheel sets his muscles in action with the aid of his brain and his muscles set the starter in operation. In this way he comes about as near to starting his engine by will power as he ever will.

Direction Instead of Execution.

The amount of muscular power required to carry out the dictates of the operator's will varies, of course, according to the type of starter attached to the engine. If it is an electrical starter, simple pressure on a button suffices; the same holds good in case of the compressed air device; the operation of the spring starter may require the expenditure of a little more muscular energy to release the power in the spring, though there is no reason why it should. These three types of engine starters rely upon something other than human muscle to perform their real work; actually they utilize part of the power of the engine.

Mechanically Boosted Leverage.

In the various types of lever or pedal operated engine starters, which are entirely different from the compressed air and spring devices that have been illustrated and described in the last three issues of



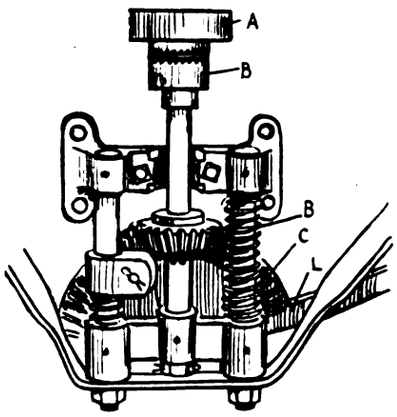
KEEN SCREW DEVICE

Motor World, designers have made frank acknowledgment of the reliability of the human machine by causing it to perform all, or nearly all, of the work of starting the motor; in doing so, however, they have made the work immeasurably simpler and easier than is the case when the time-honored and nearly obsolete hand crank, dangling from in front of the radiator, is used. They have considerably increased the leverage obtainable in every case, but what is of the greatest possible importance, they have made it possible for the operator of a motor car to start his engine without leaving his seat behind the steering wheel; and they have made it practically impossible for injury to result from back kicks.

These lever and pedal-operated engine starting devices are of several distinct types—no less than six are illustrated and described herewith—and though they are all the same insofar as their ultimate results are concerned, they all are essentially different in construction and operation. Their design implies first a material increase in leverage in order to permit the engine to be "turned over" easily, and secondly, practical insurance that no harm will result to the operator if the engine should kick back. Neither of these requirements necessitates complexity of construction, and there is nothing in any of the devices described that will require care other than the occasional application of a few drops of oil; just where the oil should be placed is well indicated by the devices themselves. Although many of the lever and pedal-operated starters on the market have been designed primarily for application to Ford cars, they may be applied just as easily and with just as much assurance of successful operation to almost any other light- or medium-weight car.

For Fords or Any Other Light Cars.

The Detroit mechanical starter, which is produced by the Detroit Mechanical Starter Co., of Detroit, Mich., for instance, is one



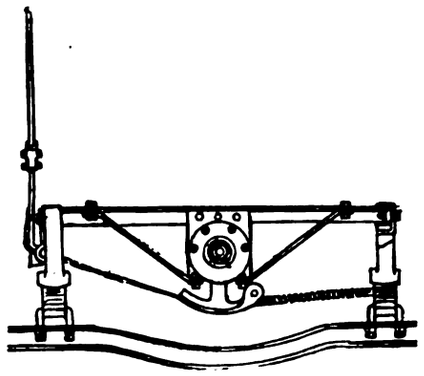
DETROIT STARTER MECHANISM

that was developed primarily for Ford cars, though it may be applied to a great many others quite as easily. It is operated by means of a long lever next to the lever that operates the emergency brake and it makes the starting of the engine about as easy as "rolling off a log." In the front view of a Ford car that is given herewith, the appearance of the starter in place is shown quite clearly; it slips on in place of the usual hand crank and scarcely takes up any more room than that device. Its extraordinarily simple internal economy is shown in another sketch, from which it is plain that there is nothing to get out of order and about three places that require a squirt of oil now and then.

The part marked A in the accompanying picture of the "insides" of the starter, at-

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taches to the extension of the crankshaft that normally engages the hand crank; its face has a number of teeth on it which engage with teeth in the part B, which is keyed to a short shaft rotated by the pinion D by means of a semi-circular bevel gear ring C. This bevel segment is firmly at-



HERCULES LEVER STARTER

tached to the lever L which, in turn, is attached to the hand lever by means of a rod.

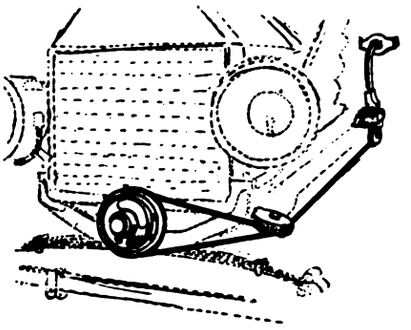
Lever and Screw Combination.

When the starting lever is pulled, the shaft carrying the part B shifts slightly, engaging the teeth; further movement of the starting lever gives the crankshaft one-quarter turn and when the starting lever is released the teeth are disengaged and the lever returns to its normal position automatically. In case of back kicks, the teeth automatically are kicked out of engagement and movement therefore cannot be transmitted to the starting lever. The device can be put in place by any mechanic who is entitled even to the designation "amateur."

The Keen starter, which is illustrated herewith in part section and which is produced by the Keen Starter Co. of New York City, is the only one of them all to employ the tremendous power of the screw to "turn over" the engine. In its essential elements it consists of a long shaft contained within a casing that is simply bolted to one of the side frame members of the chassis. This shaft has a long spiral thread cut upon it and at one end it carries a sprocket over which runs an ordinary bicycle chain; a second sprocket is attached to the crankshaft extension that normally carries the starting crank. On the spirally slotted shaft there is a runner—for simplicity it may be likened to a nut turning on a bolt—which is connected to the starting lever by means of a rod. Hence, when the starting lever is pulled, the nut slides along the slotted shaft and in doing so rotates it, the movement being imparted to the engine crankshaft through the bicycle chains and sprockets. In case of back kicks the little teeth on the runner automatically disengage, and to prevent the device running when the engine is in operation there is a simple clutch. Like the Detroit starter, the Keen device can be attached by almost any one and the only attention necessary after it has been attached is the application of a few drops of oil to the moving parts.

Takes the Pull Round the Corner.

The Hercules starter, which is made by Hercules Auto Starter, Inc., of San Francisco, Cal., can best be described as a device to transmit a pull around a corner; it is little more than that, as is made plain by the accompanying sketch. There is a long hand lever, which is placed next to the emergency brake lever, a cable from it running over a pulley to a supplementary lever on the crankshaft extension, and that is about all there is to it. It is true that the supplementary lever is attached to a small casing and that in the casing there is the mechanism that prevents back kicks from



MESNARD PEDAL STARTER

kicking back to the operator, but no one need ever be concerned with that, because it is so simple that it cannot get out of order and therefore it must always work; there is nothing to lubricate and so no oil holes are provided.

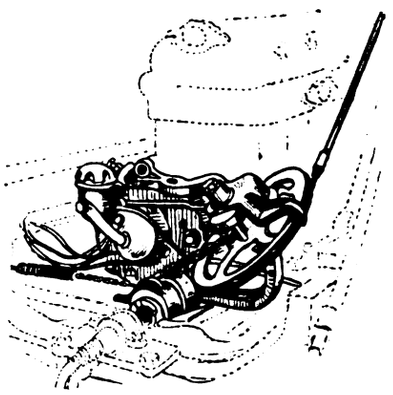
In operation, when the starting lever is pulled, a small shaft in the casing attached at the front moves longitudinally and attaches itself through a ratchet collar to the engine crankshaft; the connection between the starting lever and the engine thus is established, and when the lever is moved the length of its travel the engine is "turned over." But between the ratchet collar and the supplementary lever to which the cable is attached there are two friction plates and the pressure between them can be adjusted so that it it is just sufficient to hold when the engine is cranked against compression. Hence, if a back kick should occur, the friction plates simply would slip one on the other and no harm would be done the mechanism, for the ratchet collar cannot be turned the wrong way.

The Triplex engine starter, which is manufactured by the Bremer-Wilson Mfg. Co., of Chicago, Ill., is another that has been designed primarily for attachment to Fo cars, though with slight alteration it can attached to many other makes as well. it the manufacturers have made use o very simple and very positive releasi mechanism which is quite automatic in o eration. After attachment, the visible p tion of the device is a small handle on th dash, and this handle is attached to t mechanism that gives the crankshaft its itial revolution.

The construction of this mechanism is shown by the accompanying sketch, whic shows its position before the engine has been started—in full lines—and after the engine has been started — in dotted lines When the dash handle is pulled, the firs movement presses down a small trigger which makes positive connection between the engine crankshaft and the starting device; and when the handle is pulled ou to the limit of its travel this trigger is released, as is shown by the dotted lines in the picture, and the handle is returned to its normal position, tight up to the dash, by means of a spring. As is the case with all the other starters, there is nothing to get out of order and the only attention necessary is contained in an oil can and released by the pressure of a finger.

Worked from the Dashboard.

The Boston starter, which is produced by the Automatic Appliance Co., of Boston, Mass., is still another that has been designed primarily to ease the burden of Ford owners, though this one, too, can be arranged to start engines other than those that come from the immense Ford factories Like the Triplex, the visible portion of the device is a small handle that normally lies



BOSTON LEVER MECHANISM

nearly flush with the dashboard and scarcely would be noticed by the average individual. The handle connects with a rod which, in turn, is connected to a short cable running over a fairly large wheel; the wheel has attached to it a short chain which runs over a sprocket, or what corresponds to a sprocket, on the extension of the engine

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crankshaft, the whole arrangement being shown by the accompanying sketch.

In operation, one pull on the starting handle rotates the engine crankshaft through the intermediary of a simple roller clutch which releases automatically instantly there is any tendency on the part of the engine to be cantankerous and to kick back in the wrong direction. After the engine has been started and the starting handle is released, it slips back into its normal position against the dash and is ready for the next start; a spring pulls it back out of the way. One important feature of the Boston starter is that it is not necessary to remove the existing hand crank, though for various reasons it is desirable and advisable to do so. One thing is certain: If it is removed there is no possibility of its catching on anything in the road, as remote as that possibility may be.

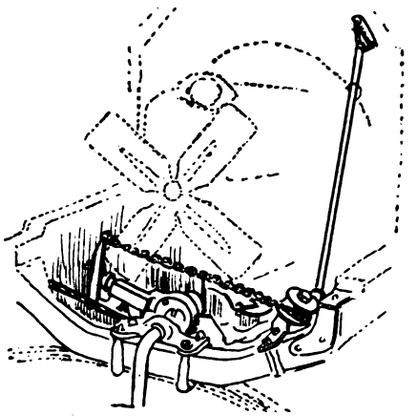
The Mesnard starter, which is produced by the Modern Sales Bureau, of Chicago, Ill., and is designed to fit Reo, Krit, Hupmobile, Overland, Paige-Detroit and Studebaker pleasure cars and Federal trucks, in addition to Ford cars, is different from any of those that have been described in that it is operated by means of a pedal instead of a hand lever. Just how it looks in place on a Ford car is shown by the accompanying sketch, which makes fairly plain both the design and the method of operation of the device. The pedal actuates a large drum mounted on the crankshaft extension through a cable which runs over the drum and back to a smaller drum containing a spring which draws the pedal back to its original and normal position. Inside the drum casing there is a simple mechanism which takes hold when the pedal is depressed and lets go instantly the engine starts or in case of back kicks.

Good Reasons for Installing Starters.

As already has been made plain, the advantage of these various mechanical engine starters lies not so much in the fact that they render easier the actual starting of the engine as it does in the fact that they make possible the completion of this operation from behind the steering column, which really is the logical place from which to start the engine anyway. Incidentally, all of these devices provide a ready excuse and a ready means for the incorporation of safety apparatus designed to protect the operator from the evil effects of unexpected back kicks. Aside from these things, they may be viewed also as legitimate enemies of that unnatural wear and tear which results when the engine is permitted to run idle for periods of varying length while the car is at rest, for they encourage the practice of stopping the engine when the car is stopped—except during traffic blockades of short duration, of course. For this reason they also may be expected to reduce fuel consumption, which in the end really amounts to increasing mileage per gallon of fuel.

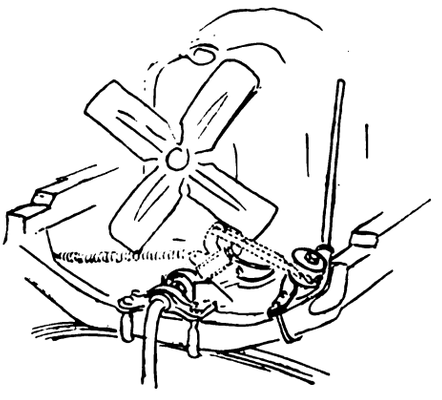
"Cranking" and "Starting."

It is unnecessary to point out, of course, that mechanical engine starters—or electrical ones or those operated by compressed



TRIPLEX BEFORE CRANKING

air or springs, either, for that matter—are designed to "crank" the motor, and because the average motor usually starts when it is cranked, all such devices have come to be styled engine starters. Actually, however, they are not engine starters in the true meaning of the words, for it is the "gas" and the spark that really start the motor, or rather, that really start it generating power.



CRANKING OPERATION COMPLETE

Any one of them will "crank" a motor, and in this respect may be regarded as practically infallible, but none will start a motor unless the motor is properly prepared for starting. In other words—the words of the beginner, in fact—no amount of cranking will start a motor unless the throttle is partly opened and the ignition current switched on.

The intelligent care of any one of the various pedal or lever-operated starters requires merely a knowledge of the beneficial effect of good lubricating oil properly applied. Wherever metal moves against metal lubrication is necessary from time to time, and if its application is not put off until squeaks proclaim its need, no trouble can visit the the apparatus during the length of its natural life.

Offered Car for Fine But Went to Jail.

The old 1904 car that has been carrying Allen R. Chappel around Brooklyn, N. Y., doesn't stand very high with its owner, despite its faithful service, for he went to jail last week rather than pay a $25 fine on it. He was haled to the Flatbush Court by a policeman, who said Chappel was going 26 miles an hour.

"Why, that old rattletrap couldn't make 26 miles an hour," said Chappel. "The thing isn't worth the money I spend for gasolene."

"Well, I find you guilty and fine you $25," said the court.

"Take my automobile, your honor!" cried Chappel. "The fine is worth more than the car."

"This court doesn't deal in automobiles," replied his honor. "You will have to pay or go to jail."

"All right, I'll go to jail, then," said Chappel. And he did, and left the car standing in front of the court.

To Brighten Leather Upholstery.

One of the most old-fashioned and, according to many who have used it, one of the best methods of cleaning and brightening leather upholstering, is to rub it well with a cloth or sponge dipped in white of egg that has been beaten up a little to prevent its being stringy, and then give it a final rubbing with a dry, soft cloth to remove all traces of the egg. The effect is said to be exceedingly satisfactory.

When French Chalk May be Harmful.

Although French chalk placed between a tube and the shoe is a very desirable adjunct to prevent the adhesion of these two essentials, too much of it may prove as bad as or worse than none. If too much is used, it is likely to work up into little balls when the continual rubbing and rolling around will ruin a tube in short order and make it almost beyond repair, or scarcely worth the cost of the work.

Noises Arising from Buckling Metal.

A form of noise that is annoying and at the same time difficult to trace is that caused by the slight buckling of a sheet metal part under vibration, a portion of the sheet being curved just enough to allow it to snap back and forth and makea noise in doing so. The remedy is either to eliminate the curve, if that be possible, or to stiffen the place so that the buckling cannot occur.

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RUNNING TO RIOT ON UNIT CONSTRUCTION

Binks and the D. E. Figure Out Future Car—Space Saved by Extending Unit Idea—Hood, Separate Frame, Levers and Pedals to Be Exterminated—Ultimate Car to Be "All Buttoned Up" With Electrical Controls.

"Has it ever occurred to you," asked Binks, "that the skin of a racing car is a whole lot closer to its bones than it used to be?"

Binks and the Designing Engineer had been looking over a number of photographs of racing cars, mostly of the kind in which a small motor with a low horsepower rating runs at an enormous number of revolutions per minute and shoots the machine along at something like 100 miles an hour.

"If you mean the style of construction that makes the car so narrow that you can't see the hood unless you stand off to one side, while the driver's elbows stick out to port and starboard of the machine," replied the D. E., "I have noticed it—sure! What's the matter? Don't you like the looks of it? Maybe we can induce the makers to change the shape to suit your critical eye," and he grinned cheerfully.

"It's not that," replied Binks. "But since you gave me that awful whirlwind of figures on the air resistance of car bodies, I have been doing a little thinking on my own hook——"

The D. E. straightened up suddenly with a look of incredulity on his face.

"Try something else, old man," he suggested. "I can't believe that."

Binks Begins Elucidating.

"On my own hook," continued Binks, calm and unruffled. "And I have come to the conclusion that some of these days the skin and bones will be combined, and there will be a whole lot less room wasted in the average car than there is now. Some of the things they do on racing cars are good enough to be done on regular machines, and I shouldn't wonder if this was one of them."

"If you have something on your mind, get it off," advised the D. E. "At the present moment you've got me going."

"I certainly have. Do you know that there's a whole lot of valuable space wasted on every car? Heaps of it. I thought that out all by myself, too. I never heard anyone put it just that way, but it's a fact, and if you think the thing over you'll see that any number of people think the same thing in a restricted sort of way; only they apply the principle locally and fail to take a broad view of it.

"Looking at those pictures just gave me the cap-stone for the structure I have erected in my mind. Oh, you might as well resign yourself. I'm doing the lecturing this time, and I'll use all the high-sounding phrases I please. Now, this unit power plant construction has brought the motor and gearbox together in what amounts to a single housing. The valve stems are covered up, the timing gears likewise, and in a good many motors the only parts that are left out in the cold are the magneto and the carburetter. All right. Well, now, the whole engine is covered up by an enormous hood that doesn't do a blessed thing but keep the dust off the lovely cast iron surface of the engine and protect the magneto and carburetter. Why not go a step further and enclose the magneto and carburetter in the power plant housing, smooth up the whole outside and chuck out the hood altogether? Let the engine stand out by itself. It wouldn't do any harm, and it could be designed so that it would look all right, once people got a little accustomed to it."

The D. E. Comes to the Rescue.

"Well, well!" commented the D. E. "That's going some, I must say. What would you do with the radiator—put that in the engine housing, too?"

"I hadn't thought of the radiator," admitted Binks, a trifle crestfallen. "That would be a poser, wouldn't it?"

"Not necessarily," the D. E. came to his friend's rescue. "How many cars have you seen with radiators behind the motor?"

"That's the idea!" cried Binks, his enthusiasm again bubbling. "Why, what a chance for the fellows who build cars with those sloping hoods! They would have twice as much room for their radiators, or they could make them much more compact, if they wanted to.

"There's more to it than that, though. Of course, different people do things in different ways, but if you pick out some of the designs and combine them, and carry things a step or two further, as I have done with the hoodless motor inspiration"—here Binks swelled his chest and stuck his thumbs in the armholes of his waistcoat—"you can save a lot of space. Suppose you build a car with the starting and lighting motor and dynamo in the flywheel—yes, yes, I know all about those systems—put the gasolene tank up under the cowl of the dash, and wipe out your gear-shift levers by using an electric or pneumatic gear-shifter. Look at the stuff you get rid of! And then why not go a step further and replace your brake levers and pedals with little switches or valves? If electricity and air are reliable enough for gear-shifting I can't for the life of me see what's the matter with applying the same principles to braking—and to working the clutch, too, for that matter."

"Oh, all of those things have been done at one time or another," said the D. E.

"That's all right," retorted Binks, warmly, getting well astride of his hobby. "But they have been done one or two at a time and not all on one car. Why the devil doesn't some one make a grand combination and put up a car that would make every other car look like a—a—a—well, like a whole collection of stuff that no one seems to have tried to get rid of all at one sweep."

"If I wasn't afraid of making you swell up and burst with pride," said the D. E., "I might say that I think there's a good deal of sense in your nonsense. Anything more?"

Pedalless, Leverless Car Forecast.

"Yes," exclaimed Binks, "there's a good deal more. I venture the modest prediction that it won't be many years before some of the manufacturers will come around to my way of thinking, and you'll be proud to think that you knew the man who conceived the noble—er—conception. Why, everything points that way. Lamps and mudguards are being combined, and so are lamps and radiators——"

"Thought you were going to have your radiator back of the engine?"

"Well, is that any reason why I can't have a lamp on my radiator if I feel like it? Didn't you ever see a car with a lamp on the dashboard? Don't argue with me, man!"

"Certainly not. I'm with you; and when you build your hoodless, leverless, pedalless and heaven knows what-less car, you might work in my old hobby of combining the frame with the body and the whole power plant with the rear axle by running a big sort of torque tube from the rear axle to the power plant housing. That isn't new, either,

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out it ought to help out your combination. You can go back in automobile history for some more ideas, too. Springs and frames have been combined. Some light machines on the other side are combining springs and axles. Seat backs have been used for gasolene tanks."

"When I shut my eyes," Binks took up the conversation, suiting the action to the word, "I can see the car of the future. There won't be a lever in sight; the driver will sit at his ease and play with his fingers on a row of buttons which will turn on the power that will do all the work for him. If he wants to look at his engine all he has to do is to—look at it. No hood to lift, or anything of that sort. He presses a button to start the motor; presses a button to stop it; presses a button to change gears; presses a button to work the clutch; presses a button to apply the brakes; presses a button to light the lamps; presses——"

"Good Lord, man! Your car's going to look like the back view of an up-to-date dressmaker's creation—all buttons! What'll you do if a button comes off—fix it up with a safety pin?"

Binks sprang to his feet with consternation written all over his face.

"I'm lost! I'm undone!" he gasped. "Speaking of buttons and safety pins reminded me that I promised to meet my wife at Sax & Snooper's department store, and if she hasn't gone she has been waiting three-quarters of an hour. Oh, Lordy!"

And Binks vanished.

Hand-Book on Starting and Lighting.

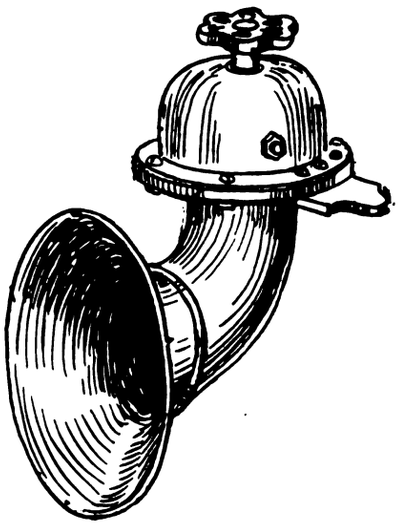
It is a fact that electric lighting and starting systems do not go out of commission very often when they are properly cared for; but it is true, also, that the average gasolene man is not an electrical expert, and when trouble does occur in the electrical department he is apt to be at a loss to locate it, however simple it may be. Therefore the hand-book that has been issued by the Electric Auto-Lite Co., of Toledo, Ohio, should be welcomed by those whose cars are electrically lighted and started, for it gives concise directions for the care of electrical systems generally, without reference to any particular make, and contains a large folding chart which provides a method of tracing trouble, in whatever for mit may show itself. The fact that the Auto-Lite system is mentioned in not unfavorable terms detracts not at all from the usefulness of the book. While the regular price of the hand-book is 50 cents, users of the Auto-Lite system can obtain it for the nominal price of 10 cents.

Replacing Electric Light Bulbs.

Lamp replacements in an electric lighting system should be made with some care, for if low-efficiency bulbs are put in where high-efficiency bulbs were intended to be used the battery or the generator may be overloaded, even though the candlepower of the lamps is unchanged. This is for the simple reason that a low-efficiency lamp requires more current to produce a given candlepower than a high-efficiency lamp. Similarly, it is not safe to replace lamps with others of higher candlepower without consulting the makers of the lighting system as to the ability of the plant to take care of the extra work imposed by the more powerful lamps.

Here's Simplicity in a Diaphragm Horn.

Large as is the number of makes of horns embodying the vibrating diaphragm principle of creating sound, there are almost as many different methods of producing the



PILOT DIAPHRAGM SIGNAL

requisite rapid oscillation of the hidden steel disk, ranging all the way from a diminutive but powerful and effective electric motor to a mere pair of gears and a toothed wheel. Representative of the extremely simple class is the Pilot horn, manufactured by the Nonpareil Horn Mfg. Co., of 75 Wooster street, New York City, the outward appearance of which is shown by the accompanying illustration.

As to the parts that are hidden under the neat, dome-shaped casing above the diaphragm, they are almost ridiculously few and simple. The little wheel that surmounts the dome is carried on a short spindle, the other end of which carries a bevel gear meshing with a bevel pinion. The pinion carries a toothed wheel which makes a contact with a little steel button on the diaphragm in the usual way. That really is all there is to the mechanism of the Pilot. It is obvious that by turning the wheel by hand gently or forcibly the tone and volume of the sound can be varied from minimum to maximum, and the blast emitted need be no stronger than the occasion requires.

Sprinkles Sand to Stop Skidding.

Taking a leaf from the locomotive engineer's book, the Auto Sand Grip Co. has commenced business at 690 Woodward avenue, Detroit, Mich., with a sanding device for automobiles that is designed to prevent slipping and skidding when the roads are slippery and to provide a good hold when the brakes are applied. J. Fletcher Williams is president and general manager of the company, Philip C. Sanderson vice-president and C. B. Shotwell secretary-treasurer.

The sanding device consists of a sand container which is placed on the running board or under the body of the car and has a pipe discharging on the ground in front of each rear wheel, and a valve on the steering wheel which admits compressed air or exhaust gas to the sand container and forces the gritty stuff through the pipe.

Key-Fitting that's Fit for Nothing.

It is not at all an uncommon thing for a mechanic who is in a hurry to "refit" a key in a keyway by bending it or otherwise deforming it with a hammer so that it will drive in hard. Unquestionably, this procedure has the effect of tightening the key for the time being, but the contact surfaces are so small that they are bound to be flattened down in a short time, leaving the key in worse condition than before. Such "fitting" may be excused as a temporary makeshift, but as a permanent job it is simply out of the question.

Short Circuits from Slopping Acid.

Acid solution on the top of the storage battery may cause leakage of current from terminal to terminal—a partial short-circuit, in fact—and so cause a shortage of current in the working circuit. If it is found that the acid has a tendency to splash out, measures should be taken to remedy the defect, for, aside from the possibility of a "short," the solution will be wasted and possibly the tops of the plates may be exposed, to their own damage and to the weakening of the current output.

Spring that Lightens Valve Grinding.

The work of grinding valves is made much easier if a spring of some sort is placed under the valve to raise it when the pressure on the brace, screwdriver or other tool used to rotate the valve is released. Any old spring that can be worked in will do, or even a heavy rubber band, or a strip of rubber from an old inner tube. Otherwise it is necessary to reach down and lift the valve by hand, which is a nuisance and takes time and energy.

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1,048,743. Shock-Absorber. Fridolin Schimmel, Faribault, Minn., assignor to Schimmel, Reid & Co., Faribault, Minn., a corporation of Minnesota. Filed Jan. 29, 1912. Serial No. 674,016. (Toggle shock absorber with conical frictions and varying pressure.) 3 claims.

1,048,748. Steering Gear. George W. Seaman, Mansfield, Ohio, assignor to The Aultman & Taylor Machinery Co., Mansfield, Ohio, a corporation of Ohio. Filed May 5, 1911. Serial No. 625,329. (Steering wheel column adjustable to angle.) 1 claim.

1,048,760. Hydro-Carbon Engine. George A. Taff, Colorado Springs, Colo. Filed Sept. 13, 1909. Serial No. 517,380. (Motor with two-diameter pistons.) 3 claims.

1,048,770. Automobile Construction. Charles L. Walker, Detroit, Mich., assignor to James W. Lucas, Benton Harbor, Mich. Filed Dec. 18, 1909. Serial No. 533,912. (Four-wheel-drive system.) 7 claims.

1,048,783. Automobile-Lock. Thaddeus Zwolinski, San Francisco, Cal. Filed July 27, 1911. Serial No. 640,890. (Lock acting on gear-shifting lever.) 5 claims.

1,048,813. Resilient Wheel. William F. Doll, Liberty, N. Y. Filed Jan. 18, 1912. Serial No. 671,846. (Wheel with oppositely disposed spirals of spring metal instead of spokes.) 12 claims.

1,048,828. Gasolene Strainer. Cyrus A. Haas, St. Louis, Mo. Filed Jan. 11, 1912. Serial No. 670,090. (Wire gauze strainer in tubular casing.) 1 claim.

1,048,832. Interrupter for Ignition Machines. Otto Heins, Edgewater, N. J., assignor to The Firm of Bosch Magneto Co., New York, N. Y. Filed May 26, 1911. Serial No. 629,599. (Breaker construction permitting wide range of adjustment.) 4 claims.

1,048,890. Steering Mechanism. Frederick M. Sadler, Ellsworth, Minn. Filed Dec. 18, 1911. Serial No. 666,386. (Steering pivot mounted inside hub.) 3 claims.

1,048,900. Dash Construction for Motor-vehicles. Charles L. Sheppy and James R. Way, Buffalo, N. Y., assignors to the Pierce Arrow Motor Car Co., Buffalo, N. Y. Filed Sept. 13, 1912. Serial No. 720,144. (Dash carrying instrument board and attached to chassis, permitting removal of body without disturbing instruments.) 7 claims.

1,048,903. Current Distributer and Timer. James M. Smith, Philadelphia, Pa., assignor, by direct and mesne assignments, of one-half to Charles Adsit Magruder, Bryn Mawr, Pa. Filed Jan. 13, 1909. Serial No. 472,097. (Interrupter with quick make-and-break and long contact.) 3 claims.

1,048,904. Elastic Wheel for Automobiles and Other Vehicles. Arturo Sordi, Lugano, Switzerland. Filed May 9, 1911. Serial No. 626,006. (Wheel with inner and outer rims separated by short cylinders of resilient material resting in transverse grooves.) 1 claim.

1,048,918. Gas Engine. Horace Russ Van Vleck, Montclair, N. J. Filed May 10, 1912. Serial No. 698,375. (Double-acting engine with rotary valve.) 8 claims.

1,048,9292. Internal Combustion Engine. Walter C. Westaway, Rockford, Ill., assignor by mesne assignments, to Chicago Pneumatic Tool Co., Chicago, Ill., a corporation of New Jersey. Filed Aug. 3, 1908. Serial No. 446,673. (Means for forcing cooling air into cylinders between working strokes.) 3 claims.

1,048,940. Tractor for Agricultural Implements and the Like. Mahlow J. Bushong, Manassas, Va. Filed June 8, 1911. Serial No. 632,057. (Two-wheeled tractor with pivoted reach for connection to body.) 3 claims.

1,048,950. Carburetter. Alfred K. George, Kansas City, Mo. Filed Feb. 2, 1912. Serial No. 674,954. (Floatless carburetter with fuel flow controlled by air valve.) 2 claims.

1,048,955. Valve for Automobile Tires or the Like. Frank A. Gilchrist, Kearney, Neb. Filed Sept. 10, 1910. Serial No. 581,388. (Double valve with concentric heads.) 2 claims.

1,048,958. Protective Casing for Pneumatic Tires. Walter R. Green, Chicago, Ill. Filed April 24, 1911. Serial No. 622,982. (Tire protective casing made of interlocking sections.) 10 claims.

1,048,969. Spring Wheel. Thomas P. Horger, Orangeburg, S. C. Filed Feb. 14, 1912. Serial No. 677,407. (Wheel with sectional spring-supported rim.) 5 claims.

1,049,001. Vehicle Spring. William Roper, Philadelphia, Pa. Filed May 15, 1912. Serial No. 697,423. (Coiled spring and linkage suspension.) 2 claims.

1,049,038. Carburetter for Internal Combustion Engines. Welch Barstow and Seymour K. Bradford, Palo Alto, Cal.; said Barstow assignor of one one-hundredth of the right to said Bradford and forty-nine one-hundredths of the right to B. B. S. Manufacturing Co., a corporation of Arizona. Filed Nov. 4, 1911. Serial No. 658,489. (Fuel flow regulated by collapsible vacuum chamber.) 2 claims.

1,049,046. Spring-Cushioned Wheel. Samuel W. Buercklin, Prague, Okla. Filed Dec. 7, 1911. Serial No. 664,312. (Wheel with small pneumatic tire around hub.) 2 claims.

1,049,061. Safety Cranking Device for Internal Combustion Engines. Francois Dion, Manchester, N. H. Filed March 29, 1911. Serial No. 617,552. (Anti-kick crank with ratchet mechanism.) 3 claims.

1,049,063. Speedometer. Elisha J. Eakin, Estes, Miss. Filed Oct. 21, 1911. Serial No. 655,949. (Centrifugal speedometer with cam movement.) 2 claims.

1,049,067. Resilient Tire for Vehicle Wheels. Otto Erickson and Olaf G. Sunden, Chicago, Ill. Filed Feb. 17, 1912. Serial No. 678,336. (Tire with helical springs between inner and outer rims.) 1 claim.

1,049,071. Spring Tire for Vehicles. Porter C. Fox, Spokane, Wash., assignor to Fox Spring Tire Co., Inc., Spokane, Wash., a corporation of Washington. Filed May 11, 1912. Serial No. 696,688. (Inner and outer rims separated by springs.) 3 claims.

1,049,084. Motor Starter. Morgan W. Hartshock, South Bend, and Guy Stutzman, Mishawaka, Ind. Filed April 1, 1910. Serial No. 552,983. (Friction clutch and gearing for motor starters.) 3 claims.

1,049,090. Device for Repairing Pneumatic Tire Tubes. Adolph R. Hoeft, Chicago, Ill. Filed Oct. 3, 1910. Serial No. 585,010. (Spring clamp for patching tubes.) 1 claim.

1,049,092. Three-Wheel Auto. Clem Clarence Holden, Flint, Mich., assignor of one-half to Ephraim D. Rice, Flint, Mich. Filed June 12, 1912. Serial No. 703,252. (Three-wheeler with one of rear wheels driven and single front wheel in line with driving wheel.) 4 claims.

1,049,097. Vehicle Spring. George M. Huston, New York, N. Y. Filed Aug. 7, 1912. Serial No. 713,827. (Two C-springs with a semi-elliptic between and linked to them.) 5 claims.

1,049,115. Electrically-Operated Motor Vehicle. James C. Macfarlane and Henry Burge, Arc Works, Chelmsford, England, assignors to Crompton & Co., Ltd., Chelmsford, England. Filed June 6, 1912. Serial No. 702,124. (Driving system for electric vehicles.) 7 claims.

1,049,122. Starting Device for Explosive-Engines. Herbert L. Meeder, Fremont, Neb. Filed Oct. 16, 1911. Serial No. 654,921. (Starter supplying compressed charges to cylinders.) 5 claims.

1,049,129. Resilient Wheel. Henry C. Moore, Cleburne, Tex. Filed May 11, 1912. Serial No. 696,774. (Hoop springs between rim and hub and also radial coiled springs.) 3 claims.

1,049,146. Detachable Wheel-Securing Mechanism. Stephen Jamieson Ralph, Stockton, England, assignor to George Keeble, Lincoln Road, Peterborough, England. Filed May 12, 1911. Serial No. 626,868. (Detachable hub for wire and other wheels.) 5 claims.

1,049,142. Tire-Alarm. Joseph B. Polo, Clear Lake, S. D. Filed Jan. 27, 1912. Serial No. 673,926. (Magnetic valve and whistle operated by escaping air.) 4 claims.

1,049,157. Tire. Percy G. Seward, Petersburg, Va. Filed Feb. 13, 1912. Serial No. 677,325. (Sectional cushion tire.) 1 claim.

1,049,190. Mowing Machine. Axel J. Anderson, East Hampton, Conn. Filed Oct. 17, 1911. Serial No. 655,131. (Motor-driven mowing machine.) 6 claims.

1,049,206. Automatic Starting Device. Eugenio Cantono, Rome, Italy. Filed Nov. 27, 1909. Serial No. 530,099. (Starter actuated by helical spring and rack-and-pinion gearing.) 2 claims.

1,049,210. Automatic Truck Body Lifter. Leslie Percival Cole, Jr., Weehawken, N. J. Filed March 23, 1912. Serial No. 685,754. (Hoisting device for truck body.) 2 claims.

1,049,220. Speedometer and Mileage-Indicator. Vincent Frank, Chicago, Ill., assignor to Shaftless Speedometer Co., Chicago, Ill., a corporation of South Dakota. Filed Sept. 29, 1908. Serial No. 455,249. (Pneumatic speedometer.) 3 claims.

1,049,246. Spring Wheel. John Lunz, Belpre, Kan. Filed April 11, 1912. Serial No. 690,048. (Spring wheel with curved spokes between hub and rim.) 4 claims.

1,049,247. Electrically-Operated Motor Vehicle. James C. Macfarlane and Henry Burge, Arc Works, Chelmsford, England, assignors to Crompton & Co., Ltd., Chelmsford, England. Filed June 6, 1912. Serial No. 702,125. (Driving system for electric vehicles.) 6 claims.

1,049,272. Acoustic Apparatus. Ernest Rubes, Brooklyn, N. Y. Filed Sept. 26, 1911. Serial No. 651,389. (Motor operated diaphragm horn. 7 claims.

1,049,286. Hood-Extending device. Benjamin Harold Baker, Southbourne, England. Filed May 20, 1912. Serial No. 698,545. (Frame for automobile top.) 4 claims.

1,049,287. Clencher Tire-Retaining Device. Samuel Barnett, Tipton, England, assignor to Joseph Darius Griffin, London, England. Filed Sept. 9, 1912. Serial No. 719,471. (Rim with expanding hoop under base of tire.) 4 claims.

1,049,294. Spring for Supporting Radiators. Herman F. Farr, Springfield, Mass., assignor to Knox Automobile Co., Springfield, Mass., a corporation of Massachusetts. Filed Dec. 16, 1911. Serial No. 666,188. (Radiator spring with coiled ends.) 3 claims.

1,049,030. Vehicle Wheel. Schuyler C. Hatfield, Baltimore, Md., assignor of one-half to George W. Smith, Baltimore, Md. Filed April 20, 1911. Serial No. 622,206. (Wheel with pneumatic tube around hub.) 3 claims.

1,049,313. Protective Shoe for Tires. James A. Murphy, Holyoke, and Robert J. Harrison, Chicopee Falls, Mass., assignors of one-third to Charles H. Morgan, Holyoke, Mass. Filed June 7, 1910. Serial No. 565,584. (Tire protector of non-stretching fabric.) 3 claims.

1,049,318. Carburetter. Walter C. Westaway, Chicago, Ill. Filed April 18, 1910. Serial No. 556,066. (Carburetter with single valve for both aid and fuel regulation.) 8 claims.

1,049,334. Buffer for Automobiles. Oscar F. Brinkman, Lancaster, Pa. Filed Aug. 30, 1911. Serial No. 646,876. (Spring buffer and attaching clamps.) 1 claim.

1,049,338. Folding Seat for Automobiles. Samuel D. Butterworth, Lansing, Mich. Filed Sept. 25, 1911. Serial No. 651,262. (Seat with automatic spring folding device.) 6 claims.

1,049,374. Oil-Engine and Vaporizer Therefor. Albert Lebrecht, New York, N. Y., assignor to De La Vergne Machine Co., New York, N. Y., a corporation of New York. Filed March 30, 1910. Serial No. 552,423. (Motor with fuel injection system and extended combustion chamber.) 11 claims.

1,049,417. Carburetter. Alfred C. Stewart, Los Angeles, Cal. Filed Feb. 27, 1911. Serial No. 611,288. (Oil carburetter with oil heating device.) 1 claim.

1,049,421. Steering Mechanism for Motor Vehicles. James H. Venners, Brooklyn, N. Y., assignor of one-fourth to William L. Millspaugh, one-fourth to Walter W. Court, and one-fourth to Frederic Venners Court, Brooklyn, N. Y. Filed Aug. 23, 1911. Serial No. 645,565. (Steering gear operated by motor.) 4 claims.

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World's Stock Champion.
Fastest Stock Mile

National

World's Fastest 500
Miles in Competition

Be more than a "dealer"

You are more than a "dealer" when you are a *National* Dealer. You become a member of the *National* family; an integral part of the great *National* sales organization. We take you into our confidence, we work for you and with you. You are as much a part of our organization as though you moved your desks into our factory offices.

First, we give you a guarantee that cannot be surpassed, a guarantee of good faith and reliability based on the quality of our cars and our reputation for dependable business methods.

Second, we give you practical assistance and complete and permanent service. Not a service in name only, but an actual, concrete service, the value of which is demonstrated by the success of our present dealers and the fact that year after year they are glad to remain with this growing and here-to-stay organization.

We would like to have you visit our factory. Here you will learn, as many others have learned, how and why *National* cars continue to maintain their enviable position in the trade.

Our manufacturing methods and facilities are a revelation. We build for quality. The efficiency, care, skilled workmanship and high grade materials that combine to produce *National* cars set the standards for the world.

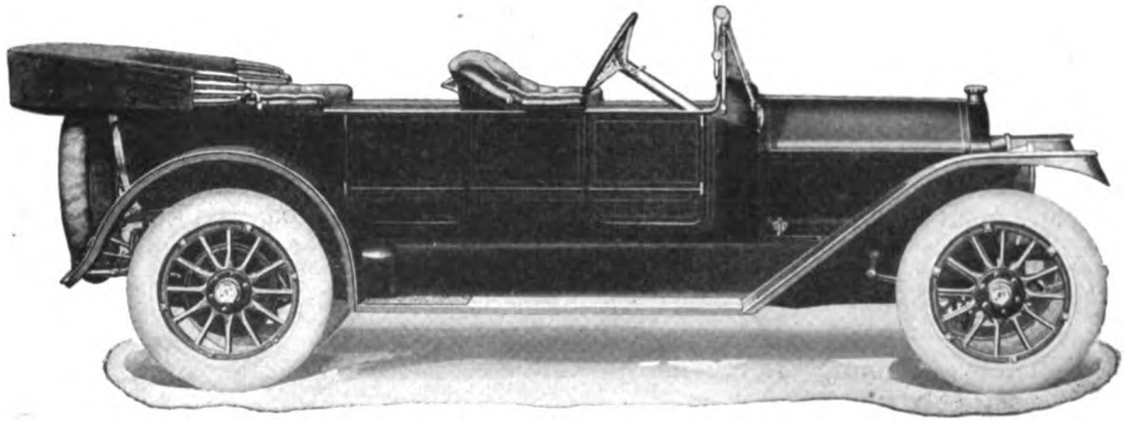
If you will write us at once and let us know exactly what day and what train you will arrive on, we will meet you with a *National* car. Now is the time to do your investigating for the coming season. You can't afford not to let us tell you about our proposition.

We are building for the future. Every one of our dealers is building a permanent, positive, money-making business, with a backing of satisfied customers who are always ready and willing to "boost."

Remember—the day has arrived for a greater popularity of the quality car; the inferior car has been tried and the educated public now demands the 100% reliable and capable machine.

The *National* in power, speed, reliability, comfort, convenience, flexibility of motor, beauty of design and noiselessness is the one car whose only superior is a better *National*.

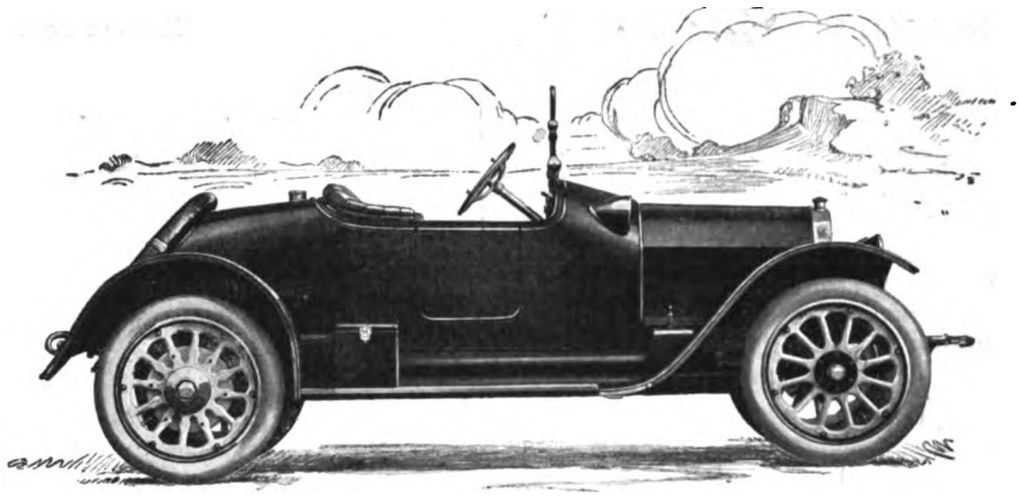
National Motor Vehicle Co., Dept. 90, Indianapolis, Ind.



Five models, $2750 to $3400

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The Pathfinder is the only medium-sized high-grade car designed and built in America



40 horse power PATHFINDER ROADSTER *120 inch wheelbase*

Pathfinder *Quality* Arguments Appeal to Live Dealers

¶ As a successful dealer in motor cars you can best appreciate the value of ***quality*** in a selling argument especially when statements can be backed up by ***facts,*** and a fine ***performance*** record to boot.

¶ Knowing automobiles, you have long held the opinion that when you found a car possessing all the necessary factors of quality, a car appealing to the large family trade and a ***good looker*** in any company, you would immediately take steps to handle the agency.

¶ Pathfinder quality is made up of not one but all of the following factors:

Quality of raw material ***Quality of design***
Quality of workmanship ***Quality of appearance and finish***

¶ Some cars get by with ***one*** of these qualities, whereas the Pathfinder's claim to distinction is harmony of construction in ***all*** of them which is the real secret of the Pathfinder's unquestioned success.

¶ Of course you won't want to decide before getting fuller details. But remember, the facts are open to your inspection and if you can't get in to see the new line, just drop us a line saying you are "interested." Your name and address on the margin of this page will do.



THE MOTOR CAR MFG. CO.

1138 Division Street Indianapolis, U. S. A.

Write your name on the margin and get 1914 Pathfinder literature

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to Automobile Manufacturers Who Have Contracted for



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Overland

1914

THE 1914 Overland is ready for demonstration and delivery. See full description on *opposite* page. Our production for next year has been *increased* to 50,000 cars. This greatly increased production, combined with the natural manufacturing economy of restricting ourselves to *one chassis*, again enables us to make our customary annual offer of *considerably* more car for *considerably* less money.

While the price has gone *down* the value has gone *up*. The motor is *larger;* the wheel base is *longer;* the tires are *larger;* the tonneau is *roomier;* the equipment is *better*—including such costly additions as *electric lights;* the body is *more handsomely finished*, in rich dark Brewster green, with heavy nickel and aluminum trimmings. In fact, in every single and individual respect it is an *improved* car at a *reduced* price.

We already have applications on file for *more* cars than we can deliver during the month of August. Therefore, it is advisable for you to see the nearest Overland dealer *promptly,* in order to secure an *immediate* delivery.

1914 catalogue on request.

Please address Dept. 50

The Willys-Overland Co., Toledo, Ohio

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$950

Overland Model 79

35 horsepower
114-inch wheelbase
Electric head, side, dash and tail lights
Timken bearings
New Splitdorf magneto
Model R Schebler carburetor
Three-quarter floating rear axle
33x4 inch Q. D. tires
Cowl dash
Turkish upholstery
Genuine hand buffed leather
Clear-vision windshield
Mohair top, curtains and boot
Stewart Speedometer
Electric horn
Flush U doors with disappearing hinges

MOTOR — Four cylinders, cast singly and set off center. Bore, 4⅛ inches; stroke, 4½ inches. Five bearing crankshaft; three bearing camshaft. Improved type of pushrods and guides, adjustable and easily removable.

COOLING—Thermo-syphon, or natural water system, without pump. Radiator has large tubes and all water pipes and connections are extra large, insuring perfect cooling.

FRAME—Pressed steel channel section reinforced with angle irons and cross members, hot-riveted.

CLUTCH—Leather-faced cone, with new type brake to permit noiseless gear changing.

TRANSMISSION — Selective, sliding-gear type, with three speeds forward and reverse. Center control. Gear case, extra strong, cast in one piece, keeps all bearings in line. Main and countershafts are short, preventing any springing.

LUBRICATION—Splash system, pump-circulated, with sight-feed on dash.

BRAKES—Double, contracting and expanding on drums on rear-wheel hubs, easily adjustable. Either set of brakes will keep car under perfect control at any speed, with full load.

SPRINGS — Semi-elliptic front, three-quarter elliptic rear, with bronze eye-bushings all around and compression grease cups on all bolts.

STEERING GEAR — Worm and gear type, easily adjustable and anchored to side frame member. Column of large diameter. Wheel, 18 inches in diameter.

FRONT AXLE—I-beam section, drop-forged in one heat, without welding. Timken bearings in front wheel hubs.

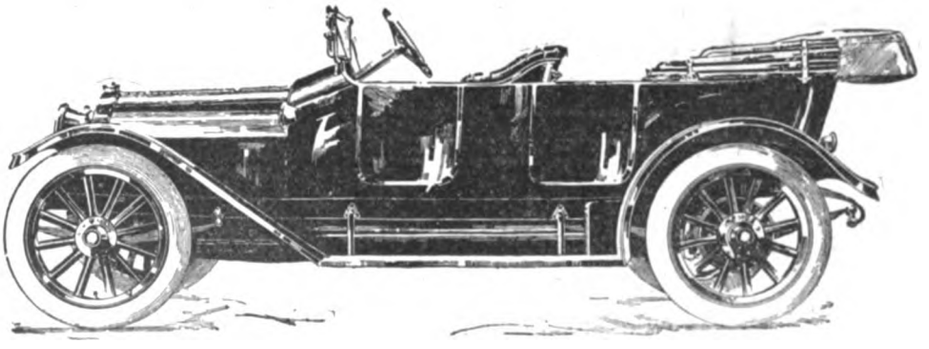
REAR AXLE — Three-quarter floating type. None of the weight of the car on the driving shafts. Hyatt bearings in rear wheel hubs.

WHEELS — Hickory, artillery pattern, with twelve spokes and bolts in each.

BODY-FINISH — Brewster green, with light green striping. All exposed metal finished in nickel or aluminum.

BODY — Five passenger; metal reinforced with wood framing.

Completely Equipped $950. With Gray & Davis Electric Starter and Generator—$1075 f. o. b. Toledo

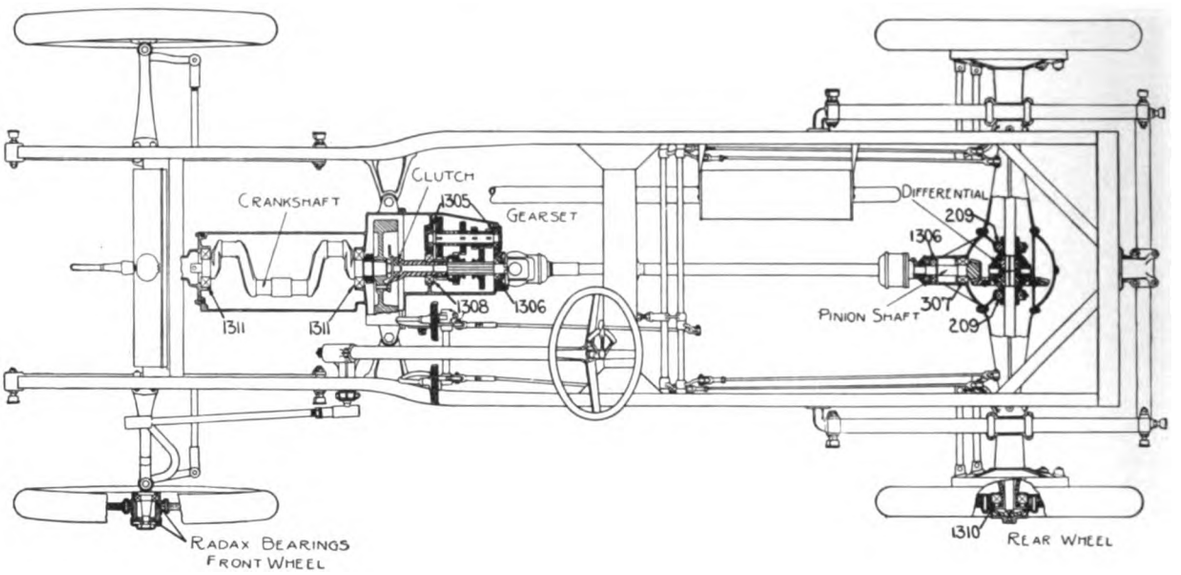


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American Made For American Trade

New Departure

Ball Bearings Throughout, and Why



By the use of New Departure ball bearings throughout the entire chassis, the manufacturer of this car has reduced power losses, repairing and operating costs to a minimum.

New Departure ball bearings eliminate friction. Friction is expensive, wears away the parts, hastens depreciation, and makes frequent repair necessary.

By eliminating friction New Departure ball bearings waste so little of the motor energy that maximum driving power is transmitted to the rear wheels. By eliminating friction there is practically no wearing away of the parts. The life of the entire car is longer and repairs are fewer.

All of these advantages are secured without sacrificing bearing efficiency. New Departure ball bearings will carry the load under all conditions of service equally as well as any bearing made.

Have you seen our interesting brochure on "Friction Elimination"? If not, drop us a card today and it will be forwarded to you by return mail.

The New Departure Mfg. Co., Bristol, Conn.

Western Branch: 1016-17 Ford Building, Detroit, Mich.

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This Is the 1914 Oldsmobile That So Many Dealers Have Been Clamoring For

The Greatest Six-Cylinder Car Ever Produced

OUR entire sales organization, engineering department and factory managers not only endorse the statement that this is the greatest six-cylinder car ever produced, but insist upon advertising it as such—there is no other expression which so adequately and truthfully describes the new 1914 Oldsmobile Model 54.

We have never before in our sixteen years of automobile manufacturing made so strong a statement. Our policy has ever been, and will continue to be, a truthful adherence to facts, and when we commit ourselves we believe we can prove by demonstration or comparison that we have not underestimated the position occupied by Model 54 among sixes.

From the purchaser's viewpoint this 1914 Oldsmobile contains every feature of refinement, stability, luxury and power that can be found in cars of greater price.

From the dealer's angle it has back of all these features a reputation as solid and as old as the industry itself.

It is fair to state that there is not another six-cylinder car in America any better or wider known than the Oldsmobile.

It is not necessary to introduce the Oldsmobile. Olds Motor Works was founded in 1880, and after 34 years of successful manufacturing we celebrate anniversaries not introductions.

You, who are familiar with motor car values, compare the 1914 Oldsmobile with higher priced cars and see for yourself if there is any reason why we should not be classed with the highest priced. Compare with cars of cheaper make and try to find an argument for not adding just a few dollars more in order to secure an Oldsmobile.

Dealers interested in six-cylinder cars have displayed a keener interest in the 1914 Oldsmobile than in any other model ever produced by the Olds Motor Works, and have unanimously pronounced it a supreme achievement among sixes.

The complete equipment on the Model 54 is the finest that money can buy.

Four or Five-Passenger Phaeton touring body type $2975
Seven-Passenger Touring Body, $175 extra
Limousine 4300

Wire Wheels—Oldsmobile Trunks and extra tires at additional cost

To reliable dealers we have an interesting and profitable message

1914 Deliveries Begin August First

OLDS MOTOR WORKS, Lansing, Michigan

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Only Your Private Whether It's Time to

The automobile business *is* a business—not a pastime. It pays better for brains and backbone than most businesses. It penalizes mercilessly the chap who attempts to play with it and repays most liberally the man who works at it intelligently.

Your Bank Roll is the Product of Your Brain

When you select a line of motor cars your fate is absolutely in your own hands. Success or failure is yours. Will you choose a car which eats up all your profits in service or will you select the car which stands up and keeps going smoothly in the hands of the average user?—that's the fellow you have to figure on. He's the chap who drives his car *hard,* breaks everything that will break, and tries to make you take the cost of maintenance out of your own profits. When you start to investigate various cars—think. While you are investigating them—*think.* Before you sign anybody's contract—THINK.

Make the maker whose contract you sign answer these questions to your satisfaction:

First: Is your car standardized—is it made out of parts which the public knows are the best parts in the world's market—the standardized parts—the parts which offer the least possible sales resistance? The more easily a car sells the more sales you can close and the more money you make—friend dealer.

Second: Is the stuff in your car so good that it is not continually breaking and costing the dealer unnecessary service expense? Service is the rat-hole down which most dealers put their profits. The sooner you stop this rat-hole with a Cole contract the sooner you will

Make More Money

Third: Is your factory discounting all its bills—has it done so from its very beginning? Is it sound, and permanent and resourceful enough to always insure prompt fulfillment of orders? Will it be here to make good to your patrons the promises you have made them in good faith? Ask Bradstreets and Duns about them. It's rating and financial integrity which counts in this business, which gives you the backing which in turn makes it possible for you to—*Make More Money.* The Cole Motor Car Company in its entire history has never yet failed to discount a bill.

Fourth: Is the car in question beautiful,

Cole Motor Car Company, Indianapolis, USA

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Ledger Can Show Hook Up With Cole

luxurious and full of eye appeal, aside from being sturdy and stout and strong? Remember that the woman in the case must like it before the man in the case will put up real money for it. The Cole is Motordom's fashion plate—the standard of beauty and the acme of "guts." It couldn't be otherwise, because actually the world's greatest designers live over the drawing-boards whereon the lines and the construction of the Cole are determined—it is this beauty and beefishness of the Cole which helps you—make more money.

Fifth: Then show Mr. Manufacturer this Roll of Honor, and ask him how many of these standard parts are in *his* car. Then just silently bear in mind that the Cole has *all of them.*

There's no use going any further, now. You either believe in making more money or you are—content. If you believe in—more money you believe in the Standardized Car—the Cole. If you're content, stay with your present proposition—we can't make money for contented men. We want men who fight for supremacy—who stick out their chrome nickel jaws and bore in after business till competition tucks its tail and runs. That's the kind the Cole Sales organization is made of. If you're our kind we can certainly guarantee that you—make more money. Just drop us a line. We need more men—like you.

Incidentally we have doubled our output and are in shape to make immediate deliveries. Nothing is of more importance to you than being able to deliver cars early.

Cole Roll of Honor

PARTS FOUND IN SERIES NINE COLE

Timken Axles and Bearings

Cole Three-Point Suspended Unit Power Plant
(Northway)

Mayo Radiator Gemmer Steering Gear

Delco Electric System Spicer Universal Joints

Detroit Steel Products Springs

Janney-Steinmetz Seamless Steel Gasoline Tank

Hydraulic Pressed Steel Frames

Firestone Tires Firestone Demountable Rims

Warner Speedometer Stromberg Carburetor

Taylor Tire Pump—Motor Driven

Collins Curtains

Originators & Builders of the Standardized Car

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The J·I·Handley Co·

Announce This brand new

Better Manufacturing

The J. I. Handley Company is a new corporation headed by J. I. Handley, President of both the American Motors Company and the Marion Motor Car Company. It has been formed for the express purpose of relieving the above mentioned factories of EVERYTHING PERTAINING TO ADVERTISING, SALES AND SERVICE.

Thus the American Motors Company will confine its efforts EXCLUSIVELY and SOLELY to the building of the already famous American Underslung, and will by this plan of specific concentration build them even better than heretofore.

The Marion Motor Car Company will devote its every ounce of energy and thought to the production of the sturdy Marion Four and Sixes, and will thus be able, through this plan of definite departmentization, to give the Marion owner even GREATER VALUE than ever before.

This DOES NOT in any degree change the individuality of either product.

It DOES NOT change the financial or production program of either company.

BUT IT DOES give each factory the full and natural advantages that always come through definite concentration.

Marion

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Sole Selling Agents

plan of specific concentration

Better Service

This newest and most advanced plan of specific concentration enables this new selling company to "get closer" to and render A HIGHER CHARACTER OF SERVICE to both dealer and owner.

All departments are in charge of the highest type and most efficient and experienced men available in the industry.

This plan DOES NOT in any way affect the dealer's individual connection.

The American dealer's relationship to the American Underslung remains EXACTLY as heretofore.

The Marion dealer's relationship to the Marion Company remains EXACTLY as heretofore.

But it DOES give every American and Marion dealer and individual owner the advantages of BETTER SERVICE which result from specific concentration.

Our dealers' sales contract is exceedingly broad and liberal.

We are delivering THE 1914 MODELS NOW.

We have sixteen division sales managers NOW IN THE FIELD.

A wire from you will bring one of them to you quickly and his story will be mighty interesting.

Wire us TODAY.

The J. I. Handley Company

Affiliated with and sole selling agents for

American Motors Co. MANUFACTURERS — ***Indianapolis, Indiana*** — **Marion Motor Car Co.** MANUFACTURERS

AMERICAN UNDERSLUNG

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Concentration of Thought Upon Rim Construction Only Has Proven Its Worth

¶The concerns in this country manufacturing steel rims used on motor vehicles do not exceed twelve in number, and out of this number the Jackson Rim Co. of Jackson, Mich., is the ONLY one whose product consists of rims EXCLUSIVELY. Consequently we claim a superiority over other producers, because we devote our entire time to "Rim THOUGHT."

¶The men connected with us are trained mechanics—*rim* trained—and have spent their time in developing and perfecting machinery that is individually ours. Special treatment of the steel in our rims has brought them to the highest possible standard, to meet the strain and requirements to which rims are subjected.

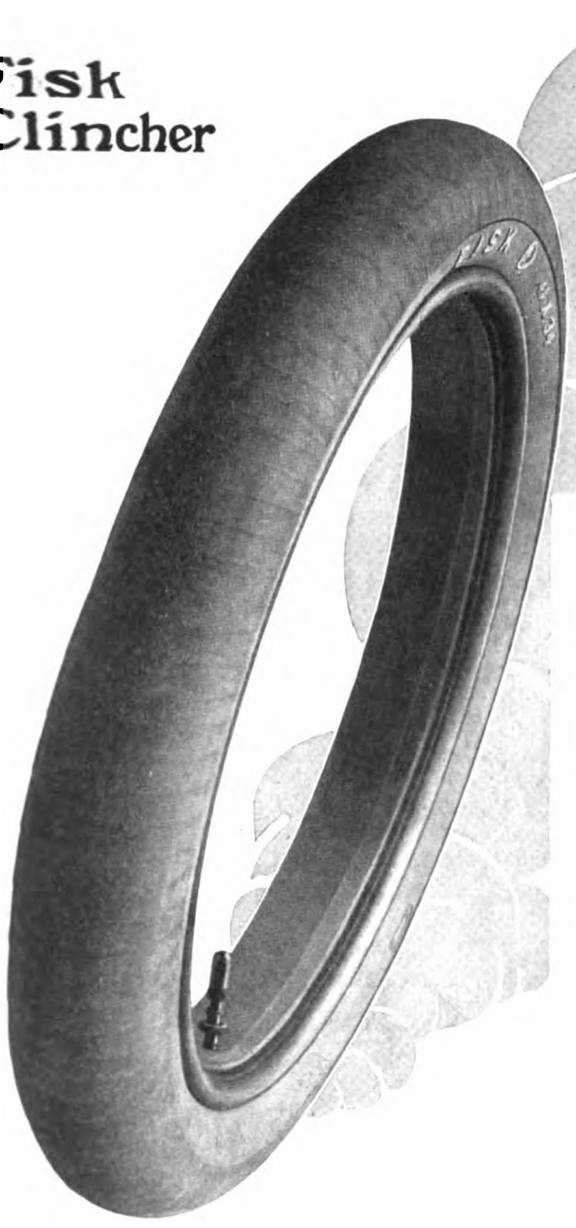
¶Our new plant is of concrete, steel reinforced and is absolutely fireproof, and this protection should in itself appeal strongly to every manufacturer of automobiles. Our Capacity of 2,000 sets of rims per day is a safeguard in placing your specifications with us.

Jackson Rim Company

Jackson, Michigan

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Fisk Clincher



HEAVY CAR TYPE

FISK TIRES

Tire Equipment On A Business Basis

HEAVY CAR TYPE FISK TIRES represent in quality, endurance and reputation all that is best in tire building. They are as good as can be made through the help of the finest materials, expert engineers, skilled labor, complete facilities and ample capital; as good as can be made by a Company that for years has concentrated on the manufacture of pneumatic tires and always with the one end in view—to make the greatest wear-resisting pneumatic tire that brains and money can produce.

We Conserve Goodwill

We know that we must give more than mileage. We realize that our customers are our assets and that on their goodwill depends our success.

Fisk Tires Are Made to Fit Any Car—Smooth or Non-Skid Tread

Only A Tube Built Like the Fisk Tube Can Give Fisk Service

Write Department 23 for Fisk Dealer Proposition

Fisk Policy

It is our aim, once we sell an owner, to give him the individual attention and all-round satisfaction that will make of him a permanent Fisk customer. Every Fisk Dealer is backed by the Fisk Policy. He treats his customers right in the knowledge that the company will treat him right.

The Fisk Rubber Company

Factory and Home Office, Chicopee Falls, Mass.

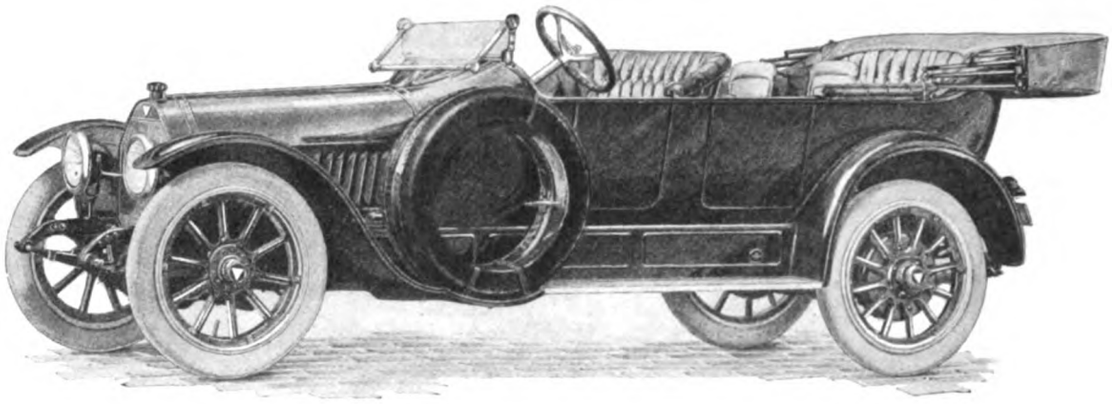
DISTRIBUTORS

THE FISK RUBBER COMPANY OF N. Y. **Branches in 41 Cities**

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HUDSON SIX 54—$2250

SEVEN-PASSENGER



The New Ideal of a Distinguished Car

HERE now is a car which typifies the ideals of the time. This streamline body—this long, sloping hood—this absence of angle at the dash—this low-hung chassis—these crowned fenders—this placing of extra tires so the front doors are left clear—these things belong to the car of today.

The concensus of the world's best opinion is that this type of body marks the coming ideal car. These are radical changes but they are coming as surely as foredoors came—and as suddenly.

All the best foreign cars—English, French and German—will this year exhibit exclusively this new streamline body. And all men know that what they adopt in body design becomes the world-wide vogue.

Our designers have added a hundred minor effects. They have Americanized—have Hudsonized—the type. So the car is distinctive. There will be no other just like it. But it embodies what we regard as the highest conception of the modern trend in bodies.

And we believe that every connoisseur will consider this new HUDSON Six the handsomest car exhibited.

Engineering Pauses

We can claim in this car no great advance as regards fine engineering and no HUDSON owner expects it. Fine engineering has limits. For the past four years Howard E. Coffin and his able engineers have given their best to the HUDSON. Last year they brought Sixes pretty close to perfection. So close that the HUDSON Six jumped in one year into the foremost rank among Sixes.

These men have worked out in this new-model car a vast number of minor engineering improvements. They have added scores of new mechanical features—some of them quite important. But we never expect to build a much better chassis than we built in our last year's Six.

This year's advances lie mainly in beauty, in comfort, in conveniences, in room. We have combined the best in lines, finish and equipment with the best in engineering. We have succeeded in making the HUDSON Six the masterpiece it is.

Now the Ideal Car

We now feel that this HUDSON 54 offers the utmost in every wanted feature. It has the staunchness of steel Pullmans. It has the comfort of Turkish lounging chairs. It has the speed of express trains. It is free from all the troubles which annoy the inexpert.

No man knows how to build a car more handsome and impressive. No conveniences are absent, no modern features lacking.

And all these things are here included in a Six 54, with seven-passenger body at the record price of $2250 (f. o. b. Detroit, Michigan).

The New Features

These are among the new features we bring out in this model. No mention is here made of the countless features in previous HUDSON models which we still retain.

Seven-passenger body.
135-inch wheelbase.
Left side drive. Right hand control.
36 x 4½-inch tires.
Extra tires carried—as never before—ahead of the front door. This leaves both front doors clear.
Four forward speeds.
Pure streamline body.
Low-hung body.
No angles at the dash.
Wide tonneau doors.
Gasoline tank in dash.
Electric self-cranking with the rapid type of the Delco system built especially for this car.
Powerful electric lights with dimming attachment for city driving. They also act as ordinance lights.
Extra seats in tonneau fold into back of front seat, entirely out of the way.
Jeweled magnetic speedometer in dash, with new concealed noiseless gears.
Every operation and control placed within reach of the driver's hand. Gasoline and oil control, lights and starter.
Individual Yale lock on ignition control, prevents theft of car.
Rain-vision windshield built as part of the car.
Genuine Pantasote top. Curtains that are carried in the top can be instantly adjusted.
Electric horn—trunk rack—tire holders—license carriers—everything.

Go See It—Go Today

Go to the local HUDSON dealer and see this new achievement. It is not merely an improved car—it's a real innovation. It will display to you all the best thought of the day in automobile designing. Go see it while it's new.

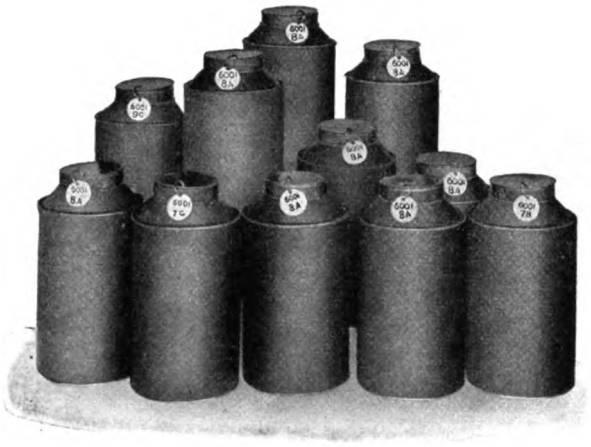
Our catalog on request.

Hudson Motor Car Company

7702 Jefferson Avenue, Detroit, Michigan 257

Go see this car today everywhere HUDSONS are sold

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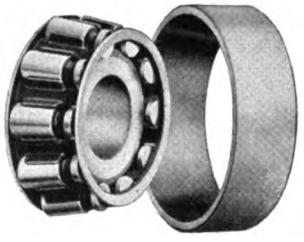
No Loafers in These Cans!

WHY are the tapered rollers for Timken Bearings securely sealed in sheet steel cans—cans that are never unsealed till they stand on the benches of the men who assemble the bearings?

To make sure that no off-size roller gets into the Timken Bearing!

For a "low" roller would "loaf" and throw its share of burden on its neighbors. A "high" roller would carry more of the load than it should.

TIMKEN ROLLER TAPERED BEARINGS



So every roller for every size of the Timken Bearing goes through an automatic size-gauging machine—the machine of the sixteen traps. Each trap catches the size roller for which it is set—and no other—and drops it into a can.

The millions of rollers must not get mixed after they've passed through the size-gauging machines. So each can is sealed when filled. On the metal seal the size is stamped—exact, to a quarter of the thousandth part of an inch.

Precautions like this are taken so that users will get something more than the Bearing whose "different" principles of design enable it to meet greatest radial load, plus end-thrust, to offer greatest resistance to wear, and to adjust perfectly for the slight wear that must come with long use.

That "something more" means longer life; smoother, quieter running; greater safety. It means an overflowing measure of satisfactory service.

THE TIMKEN ROLLER BEARING CO.
Canton, Ohio, U. S. A.

Every Timken Bearing, large or small, is of just one Timken Quality, through and through

125

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The Foreign Trend

The builders of motor cars abroad are constantly introducing new ideas, new body designs, new equipment and new methods of construction.

There are wire wheels and worm drive now. And other things are promised.

But some things there, as here, are standard.

One is The Jones Speedometer.

Seven years ago The Jones became Europe's most popular speedometer.

It won the Royal Automobile Club's gold medal for all around superiority in a test that covered 2,000 miles and lasted 30 days.

It was placed on the cars of the King of England, the Emperor of Germany, the Czar of Russia, the King of Italy, the King of Spain, and the Kings of Siam, Norway, Sweden, Denmark and Belgium. The President of Switzerland and the President of France, and hundreds of other notables used it.

It is used by these rulers and thousands of others on the best cars today.

No other speedometer ever gained such prestige or was ever so widely sold abroad. No other sells there today like the Jones. The love of new things—the foreign trend—doesn't dislodge the Jones.

It is regarded as the Standard Instrument because of its accuracy. And nobody ever thinks of displacing it. The makers of thousands of American cars are factory-equipping their product this year with the New Jones Speedometer.

They expect their cars to be used the year 'round and they know the Jones isn't affected by temperature. The Jones is the Universal Speedometer. Makers and owners are finding this out. It is accurate, ***always***. The simplest in principle. And the longest-lived.

It's the product of Jos. W. Jones, the inventor of the speedometer as used on motor cars. Nothing else will ever serve like the Jones Speedometer.

Let us send you the man who knows it in detail and can give you the fullest information in regard to placing it on your car.

THE JONES SPEEDOMETER

Broadway at 76th Street NEW YORK CITY



This is the Gold Medal presented to The Jones Speedometer by the Royal Automobile Club of Great Britain and Ireland. Eleven different instruments competed in the test—foreign and American makes. The Jones made the only perfect score on seven points of superiority. And the Jones is the only speedometer that has ever won this medal.

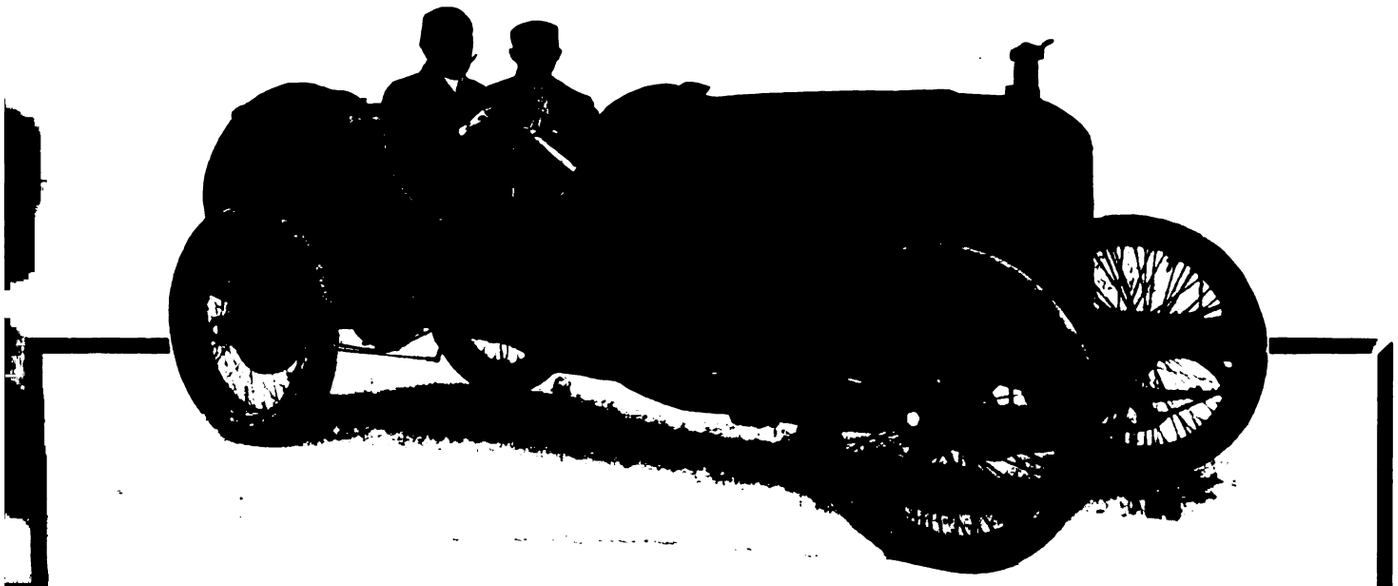
BRANCHES

New York, Broadway at 76th St.
Boston, 109 Massachusetts Ave.
Philadelphia, 1427 Vine St.
Chicago, 1430 Michigan Ave.
Baltimore, 217 W. Saratoga St.
Detroit, 872 Woodward Ave.
Buffalo 20 Goodrich St.
Pittsburgh, 5904 Penn Ave.
Cleveland, 8451 Euclid Ave.
Charlotte, 209 Church St.
Memphis, Madison Ave. and 4th St.
Newark, N. J., 282 Halsey St.
Minneapolis, 800 Hennepin Ave.
Omaha, 1604 Harney St.
San Francisco, 1436 Van Ness Ave.
Los Angeles, 408 W. Pico St.
Portland, Ore., 71 Seventh St.
Seattle, 1710 Broadway
Indianapolis, 1201 State Life Bldg.
Atlanta, 35 North Pryor St.
New Orleans, Baronne and Perdido Sts.
Birmingham, 18 South 20th St.
Denver, 1600 Broadway
Albany, N. Y., 133 Hudson Ave.

FOREIGN AGENCIES

J. Millen & Son, Ltd., Montreal, Toronto, Winnipeg, Vancouver; Markt & Co (London), Ltd., London; Markt & Co., Hamburg, Milan, Vienna, Barcelona; A. A. Kampfmath (Brussels), Ltd., Brussels, Amsterdam; Severin & Co., St. Petersburg; G. Bruggemann, Moscow; Y Wm. D. Rose, Paris; D. Easy & Co., Sydney, Australia; The Tarrant Motor Co., Melbourne, Australia; C. E. Helvie, Manila, P. I.; Adams, Ltd., Christchurch, N. Z.; Markt & Schaefer Co., Rio de Janeiro, Brazil; Buenos Aires, Argentine; Mexico City, Mex.; Habana, Cuba; San Juan, Porto Rico.

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BOSCH WINS

Grand Prize Race of France

The fastest road race of the year, the Free-for-All Grand Prize Race of France, was another "clean sweep victory" for Bosch Magnetos and Plugs.

1st	Bablot	— Delage	— Bosch Magneto and Plugs
2nd	Guyot	— Delage	— Bosch Magneto and Plugs
3rd	Pilette	— Mercedes	— Bosch Magneto and Plugs
4th	Salzer	— Mercedes	— Bosch Magneto and Plugs
5th	Duray	— Delage	— Bosch Magneto and Plugs
6th	Lautenschlager	— Mercedes	— Bosch Magneto and Plugs
7th	Thoms	— Schneider	— Bosch Magneto and Plugs

This showing made by Bosch was not an accident, not a mere chance performance, but a clean cut, sweeping victory by which it was again proven that Bosch Products give not only reliable and efficient service, but consistent service also.

Don't Court Puzzling Ignition Trouble
Be Satisfied — Specify Bosch

Bosch Plug and Magneto Literature on Request

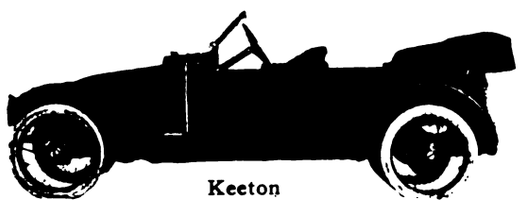
BOSCH MAGNETO CO., 224 West 46th Street, New York

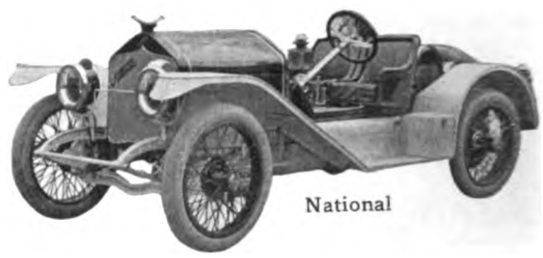
Fully Equipped Stations in All Important Centers

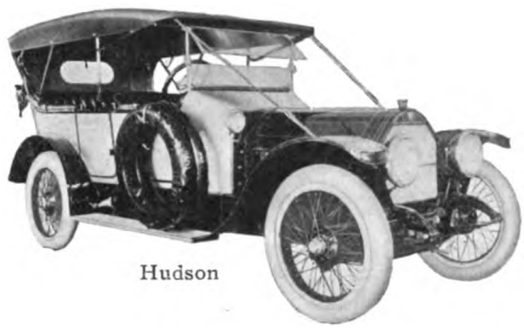
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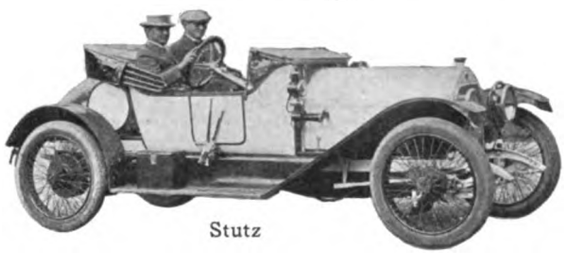
Yes—You Can Get Wi

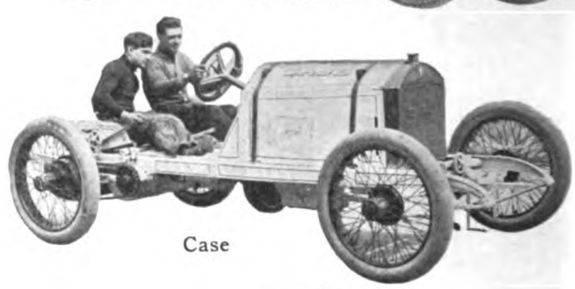

Keeton

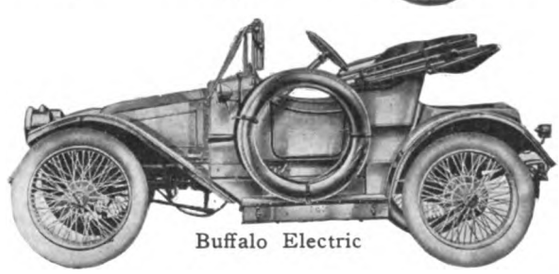

National

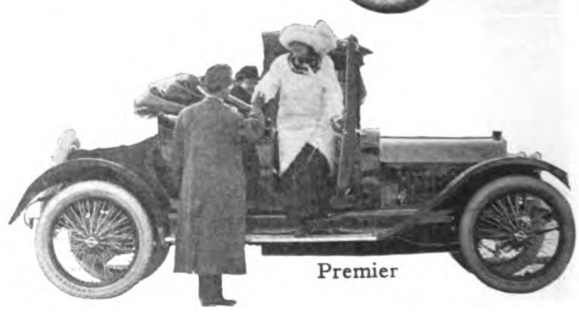

Hudson


Pathfinder


Stutz


Case


Buffalo Electric


Premier

YOUR recommendations to the manufacturer whose cars you sell carries weight especially if your recommendations have to do with better car service. The reason why you should talk wire wheels to your manufacturer and to your customers is because your cars, wire wheel equipped, will ride easier, be much safer and give greatly increased tire mileage.

We spoke of better riding qualities; wire wheel construction really furnishes resilient suspension to the car's weight instead of a rigid support, as is the case with wooden wheels.

We have told you that wire wheels add to a car's safety. Do not be surprised when you learn that their strength to resist side thrust such as skidding against the curb, is about fifteen times greater than wooden wheels, and that their carrying strength is over five times that of wooden wheels.

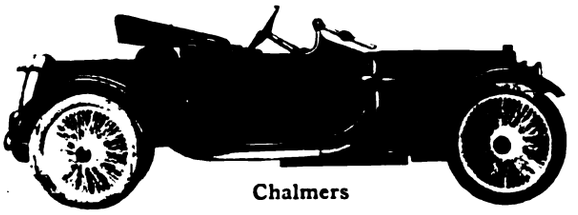
The real value of wire wheels comes in their economy on tires, and this is about 50%.

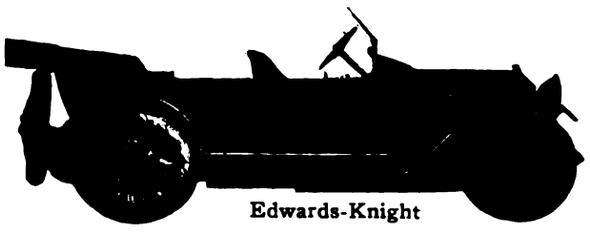
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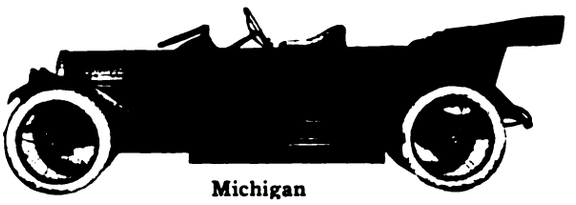
Vire Wheels?

heel Equipped Cars

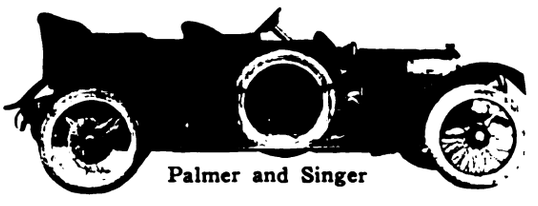

Kline Kar

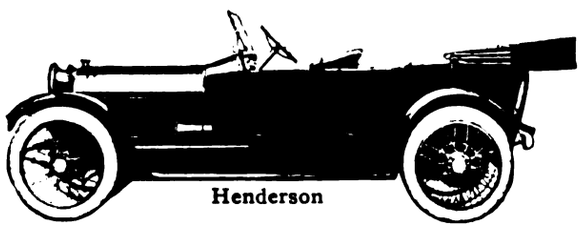

Chalmers

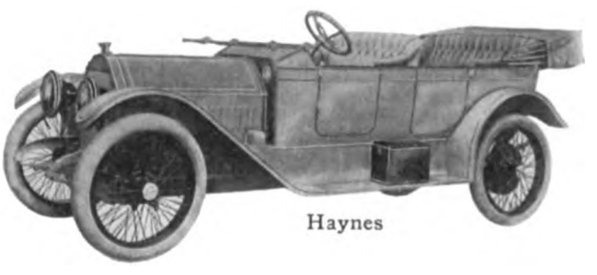

Edwards-Knight


Michigan


Oakland


Palmer and Singer


Henderson


Haynes

There is the theory of all metal construction for motor cars which favors wire wheels and which militates against wooden wheels. But all theory forgotten, can wooden wheels stand much longer against wire wheels, especially when every practical reason such as strength and safety calls for wire wheels. Can the wooden wheel precedent stand against better riding qualities of wire wheels, or can any reason stand against wire wheels with their 50% more tire wear?

Every dealer should demand wire wheels on his cars and should talk wire wheels to his customers. The reason is better car service. Don't think your customers are not thinking—they have to pay the bills.

THE McCUE COMPANY, Buffalo, N. Y.

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A Car Is as Strong as Its Springs

Cleveland-Canton Automobile Springs

Equipped with cheaply-made springs, a car gets such constant jolting, bumping and vibration that the engine soon racks to pieces. One spends vastly more for repairs than good springs would have cost originally.

We could save surprisingly in making Cleveland - Canton Chrome - Vanadium Springs if we used old-style steel. But such steel wouldn't endure, wouldn't so surely stand severe strains and shocks.

So we use "cross-rolled" chrome-vanadium steel. This steel is made by a unique process. It is rolled both longitudinally and transversely, uniting the elements in a manner impossible with ordinary methods.

Thus there are no "pipes" or "snakes" in it, no "blow-holes." It never seams, cracks or splits. It is amazingly tough, elastic and strong.

Cross-Rolled, Chrome-Vanadium

"Not a Bump In One of Them"



"Built for Life-Long Endurance"

Cleveland - Canton Chrome - Vanadium Springs are tested to endure greater strains than any motor vehicle ever encounters. *In five years not one Cleveland-Canton Chrome-Vanadium Spring returned because of breakage or settling.*

They are tempered in oil, fitted by hand. Made like no other springs that we know. And the result is motorists everywhere are demanding them. They want the certain protection such springs give, the freedom from jolts and shaking they ensure. You should know more about them. Send us your blue-prints and let us figure with you.

Best Grade—Chrome-Vanadium
Next Best—Special Analysis

TRADE CLEVELAND CANTON MARK

The Cleveland-Canton Spring Company

Canton, Ohio, U. S. A.

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HERE'S THE BEAUTY!!!



BELLE ISLE MODEL 50-60 Six Cylinder, 130-inch Wheelbase. Price $2190 f.o.b Detroit. Top, Top Boot, Windshield, Warner Autometer, $100 Extra

The Name to Tie to for the TEN Cardinal POINTS OF Automobile VALUE

Abbott-Detroit

STYLE
To attract the prospect.

HIGH QUALITY MATERIALS AND WORKMANSHIP
To convince the investigating buyer.

STRENGTH
To stand the knocks.

POWER
To negotiate the roads.

SPEED
To "get there" and "back again."

COMFORT
To delight the ladies.

EASE OF CONTROL
To enable any one to drive it.

LOW COST OF OPERATION
To satisfy the careful owner.

SERVICE AND COOPERATION
To help the dealer and driver.

NET PROFIT
To enable the dealer to stay in business for the future.

Dealers in unoccupied territory should get our direct factory proposition and make 10% more net profit than on any other line. Write us today for special offer.

34-40 4 Cylinder 5 Passenger Touring.....$1685	44-50 4 Cylinder 7 Passenger Touring.....$1985
34-40 4 Cylinder 3 Passenger Roadster..... 1685	44-50 4 Cylinder 3 Passenger Roadster..... 1985
44-50 4 Cylinder 5 Passenger Demi Tonneau..... 1985	50-60 6 Cylinder 7 Passenger Touring..... 2190

50-60 6 Cylinder 3 Passenger Roadster.....$2190

Equipment Top, Top Boot, Windshield and Speedometer, $100 extra.

All models electrically started and lighted with independent dual magneto ignition.

ABBOTT MOTOR COMPANY, Detroit, Mich., U. S. A.

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OhiO Announcement

Model "4-35" 5 Passenger—$1,275
" "4-50" 5 " — 1,750
" "6-60" 5 " — 1,985
" "6-80" 7 " — 2,485



Illustrating the OhiO "4-50", Price $1,750

YOU, as a foresighted dealer, know that the forthcoming year will be one of exceptional values. OhiO dealers are more than ready for the test with their 1914 line.

Keen buyers who have seen the OhiO line invariably say, "How do you put so much value in it at the popular price?"

HOW we do it is unimportant. What counts for the OhiO dealer is the fact that the OhiO car for 1914 is a maximum value in sturdiness, comfort, economy and "class."

Read these specifications and decide for yourself.

SPECIFICATIONS 1914 CARS

OhiO "4-35" Five Passenger---Price $1,275

Motor—4¼ x 4¾.
Axles—Full floating on annular bearings.
Transmission—Three speeds and reverse.
Clutch—Multiple disc.
Inside control; right-hand drive.
Speedometer—Stewart.
Rims—Demountable.
Tires—34 x 4.
Wheel Base—115 inches.

OhiO "4-50" Five Passenger---Price $1,750

Motor—4½ x 5¼.
Axles—Full floating on annular bearings.
Transmission—Three speeds and reverse.
Clutch—Multiple disc.
Center control; left-hand drive.
Speedometer—Stewart.
Rims—Firestone demountable.
Tires—35 x 4½.
Wheel Base—122 inches.

OhiO "6-60" Five Passenger---Price $1,985

Motor—4 x 6.
Axles—Full floating on annular bearings.
Transmission — Four speeds and reverse, direct on fourth.
Clutch—Multiple disc.
Center control; left-hand drive.
Speedometer—Warner, flush type.
Rims—Firestone demountable.
Tires—35 x 4½.
Wheel Base—132 inches.

OhiO "6-80" Seven Passenger---Price $2,485

Motor—4½ x 6.
Axles—Full floating, annular bearings on rear; taper roller on front.
Transmission — Four speeds and reverse, direct on fourth.
Clutch—Multiple disc.
Center control; left-hand drive.
Speedometer—Warner, flush type.
Rims—Firestone demountable.
Tires—36 x 4½.
Wheel Base—138 inches.

ALL CARS HAVE THE FOLLOWING STANDARD EQUIPMENT:

Starter and Lighter—Jesco. Top—Mohair, with dust hood and Jiffy curtains. Windshield—Rain vision and ventilating. Trimming—Black and nickel. Lamps—Full electric. Ignition—Dual magneto on all models. Willard battery, tire carriers, one extra rim, tools, etc. Colors for all models—Sheet metal parts black; body and chassis, option of Brewster Green or Royal Blue. All models have luxuriant ten-inch upholstery.

A complete line you notice—a car for every buyer and every pocketbook. Each model electrically started and lighted, and fully equipped.

If you are not one of those who now possess an OhiO Dealership, the next page holds for you a message of consuming interest.

Read it, and then ACT.

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for 1914?



There Are Thirty Opportunities Open

Thirty up-and-doing dealers are going to snap up the OhiO car agency this week—
But only thirty, bear in mind.

Our increased output for 1914 requires but thirty additional dealers to take care of the increase, and only this number can possibly be accommodated.

We have told you what an exceptional value the OhiO car offers the buyer. You want to know what we will do for you if you obtain the OhiO dealership.

Here's What We'll Do for Our New Dealers

Occasionally you have the opportunity of tieing up with an organization that believes that your success and theirs is one and the same thing—that YOUR success as a dealer is vital to their success as a manufacturer.

We not only believe that, but we are spending much time, money and brains to make your success a permanent and assured fact.

We're willing to go the limit to make the OhiO car THE car of your community.

Now then—if you want to cash in on a wonderful car-value plus real profit-building factory-co-operation, quick action is your play. The quicker the better.

Wire us at our expense, because right now there is probably some other keen dealer who is planning to get the OhiO Dealership in your territory.

Are you going to let him beat you to the wire?

Crescent Motor Company

R. E. NORTHWAY, President

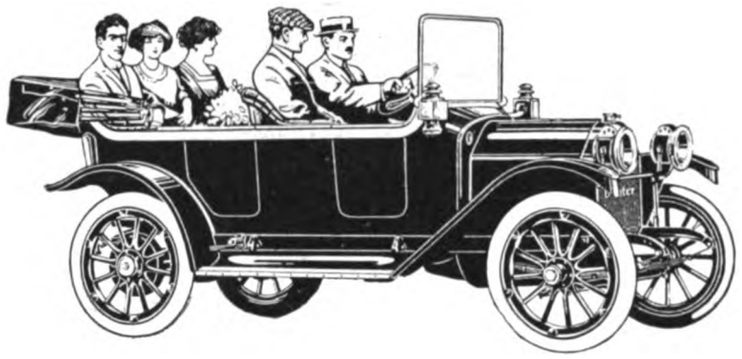
CINCINNATI, OHIO

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$850 Fully Equipped **Detroiter** **$900 Special Equipment**

No Season Models—Always Up-to-Date

The Detroiter is never left unsaleable on a dealer's floor because of the announcement or the expected announcement of a lot of radical changes. Every new improvement is incorporated with the next thousand lot of cars to go through the factory. This plan helps the dealer—is helping over 600 Detroiter dealers right now—will help you if you take on the car.



And where will you find another car that offers you in sales possibilities all that the Detroiter does, at less than $2,000 or over? Look at the beauty. It has a better appearance than many that cost three times as much. Look at the strength, the roominess.

Note The Economy, Too

The Detroiter is not a heavy car, yet the makers have avoided the other extreme of making it too light. Though it has weight enough to give it abundant strength at every vital point, it will run as economically on fuel and tires as any car made, bar none. 20 to 25 miles on a gallon of gasoline, and over 100 to a quart of lubricant is its everyday record.

The Nine Big Features

These are the nine big features that have made the Detroiter the leader of its class:

1. **Ball bearing throughout.**
2. **Long stroke, high power motor, unit power plant fully enclosed.**
3. **Full floating rear axle.**
4. **Left hand drive, center control.**
5. **Extraordinary braking surface.**
6. **Multiple disc clutch running in oil.**
7. **Extra capacity tubular radiator.**
8. **Enclosed valves all on one side.**
9. **Platform rear spring.**

What These Features Guarantee

The long stroke motor gives tremendous power on all speeds.

The full floating rear axle, with its powerful gears, could drive a car of double the weight and power.

The large brakes guard the car against accidents and trouble.

The platform spring in rear eliminates the road shocks.

Every one of the nine big features has been proved by years of experience.

Service Made Sure

With such features as these, found only in other cars that average $3,555.80, it is plain that the Detroiter offers the utmost in motor car value at the least possible price. You can pay more, but you cannot get more. You can pay less, but you will not get half as much.

Years of Study Behind It

This car is the result of years of study and the experience of men who have been in the automobile business from the beginning. These men have brought together the strongest points in many different makes of motor cars; have carefully avoided the weak ones, and at last in the Detroiter produced a perfection of finish and design that is the talk of the motor world.

Dealers: **Get the Detroiter proposition by return mail—now is the time to prepare to make more money in 1914.**

BRIGGS-DETROITER COMPANY

449 Holbrook Avenue **Detroit, Michigan**

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HYATT QUIET BEARINGS



HYATT ROLLER BEARINGS require no adjustments after the car has left the factory. Once properly installed and given a little lubrication now and then, and they will give a care-free service that is unequalled.

The hollow Hyatt Roller retains a large quantity of the lubricant and the spirals, alternating from left to right, constantly distribute it over the surface of the bearing.

Grit and dirt that ordinarily grind between bearing surfaces is forced into the hollow center of the Hyatt rollers through the spirals, keeping the bearing exceptionally free from foreign matter.

Flexible Hyatt Rollers cushion the road shock, absorb vibration, reduce noise, and give under strain just enough to relieve the gears and shafts of excessive duty, yet are rigid enough to carry the load.

HYATT ROLLER BEARING CO.
DETROIT. MICHIGAN
Works, Newark, New Jersey

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Territorial A

INVA

O

Clearest



FACTORIES:
NEW YORK.....92 Pearl St.
PHILADELPHIA.....113 Arch St.

BRANCHES:
BOSTON.....284 Columbus Ave.
WASHINGTON, 3627 New Hampshire Ave., N. W.
PHILADELPHIA, 113 Arch St. and 719 N. Broad St.

INVADER O
Lessees of Cl
Main Office: 81 Broa

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nts Wanted



DER

LS

Cleanest

COMPANY
lom & Co.
eet, New York

TERRITORIAL AGENTS

Boyer-Campbell Co.	Detroit, Mich.
Beck & Corbitt Iron Co.	St. Louis, Mo.
Motor Car Supply Co.	Chicago, Ill.
Lee Hardware Co.	Salina, Kan.
American Lubricating & Supply Co.	Kansas City, Mo.
James Bailey Company	Portland, Me.



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Who machines your Crankshafts?

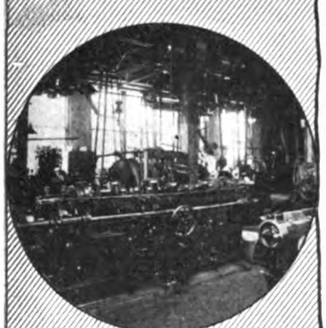


A 50% increase in capacity—and what it signifies

Recent additions to our plant give us a fifty per cent. increase in capacity.

This is significant of the trend of the industry. It points unmistakably to a keener appreciation of the niceties of crankshaft finish. It indicates that both engineers and purchasing agents are reckoning upon a perfectly balanced, perfectly finished crankshaft as a big factor in producing that steadiness of pull and continuous flow of power sought for by the car wise.

It shows an opening of eyes to the fact that true refinement begins **inwardly** and works **outwardly**; that **realities**, not superficialities, are the things that count.



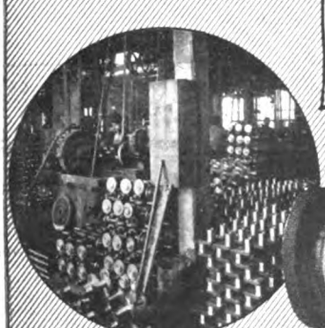
You can't build a fine machine without fine machine work

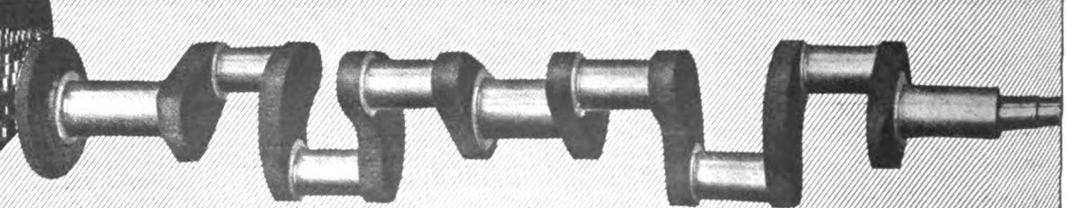
This has been our conviction for seven years, during which our machine work on crankshafts has become part and parcel of many famous motors. Gradually, but surely, faith in our ability to do the right sort of machine work and deliver it as scheduled, has permeated the industry.

That is the significance of our large increase in capacity.

There is a message in it for you. Who machines **your** crankshafts? If we don't, supposing you get in touch with us.

Auto Crankshaft Co Detroit





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Hartford CONE CLUTCHES

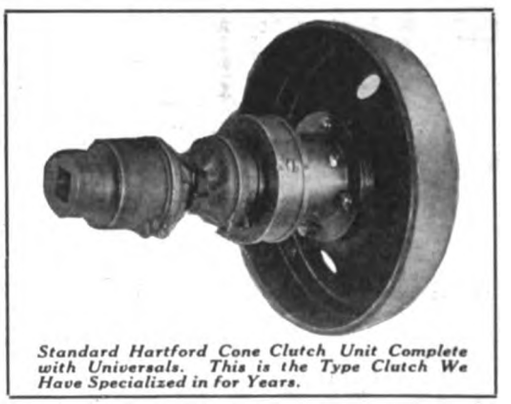
Common Cone	Dry Disks	Expanding Ring
Inverted Cones	Disks running in Oil	Contracting Ring
Double Cones	Dished Disks	Spiral Band, etc., etc.
Metal-to-metal Cones	Metal-to-metal Disks	
Leather or Lining Faced Cones	Disks faced with Lining	
Cork Insert Cones	Cork Insert Disks	

These are some of the various kinds of clutches.

Which ones do you recognize readily? In other words, which kind of clutch is in more general use? Why is it that some one or two of all the various kinds of clutches are more familiar to you because of more general use than others?

For no other reason on earth than their efficiency for the purposes of clutches—unless it be that the one or two particular kinds of clutches have stood the test of time longer than the others.

In the last analysis the cone type clutch dominates—for trucks as well as for pleasure cars. In their decision, rendered at the request of the U. S. War Department, the S. A. E. selected the cone type clutch as the one calculated to give the best results.



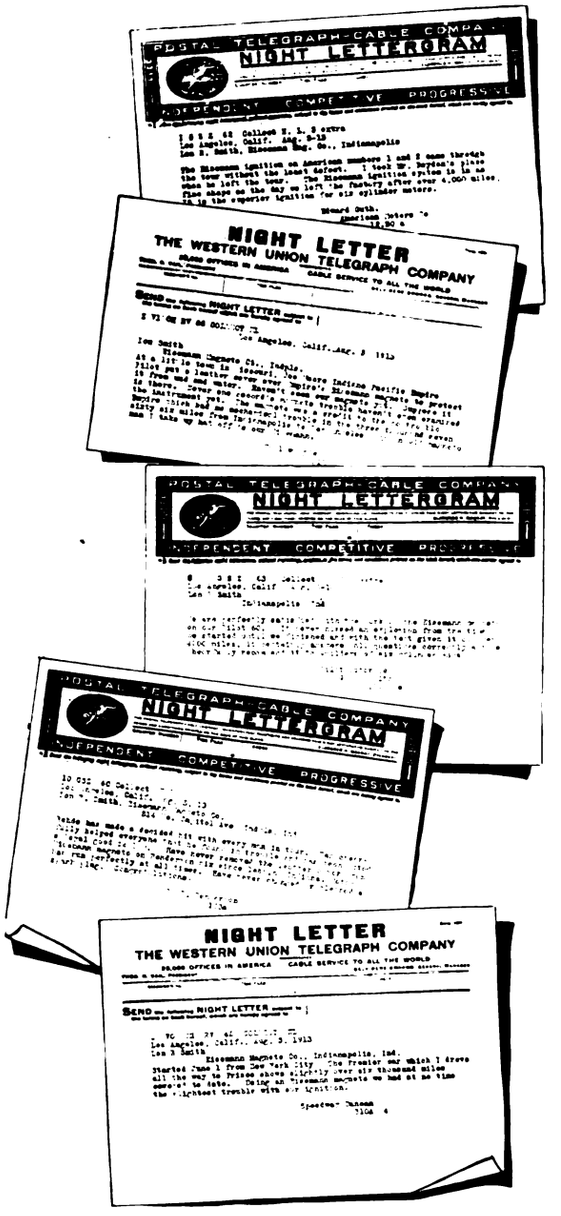
Standard Hartford Cone Clutch Unit Complete with Universals. This is the Type Clutch We Have Specialized in for Years.

Cone Clutches have always been the principal product of this company Regardless of the price of the cars on which they are used there is only one quality of Hartford Cone Clutches—the best that materials, skilled workmanship and rigid inspection can produce. In regard to prices, our equipment of special machinery enables us to make clutches of the highest quality at commercial prices. Deliveries of all orders placed with us will be made strictly according to schedule. Let us figure on your clutch requirments.

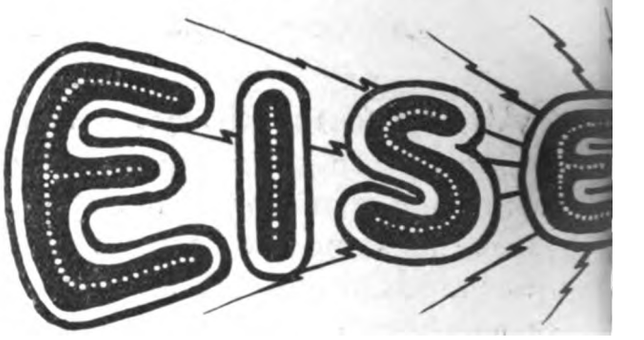
Hartford Auto Parts Company
HARTFORD, CONN.

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Eisemann Efficiency an In Greatest Ignitio



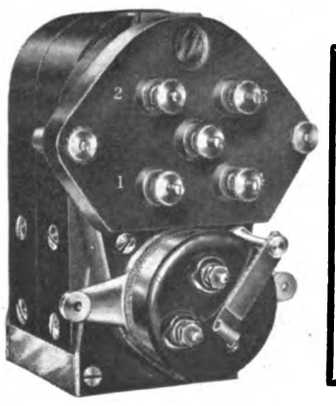
Everyone of the 11 Eisemann Equippe cars, of the 19 that made the tour fro Indianapolis to San Francisco finished th trip without one iota of ignition troubl Surely no greater demonstration of th wonderful efficiency and dependabilit of an ignition apparatus has ever bee recorded in the history of motor ca



It was tribute enough to the high standing of the Eisemann product when eleven entrants decided to depend upon Eisemann Ignition while the other eight were divided by five other manufacturers of ignition devices. But to have all eleven Eisemann Systems (each and every one just regular standard equipment) go through this terrific test without showing one deficiency or one even temporary breakdown, shows beyond all contradiction that there is no exaggeration in our claim of producing the most efficient and the most dependable ignition system on the market.

Mark well that this is no victory on a macadam race track where uniform conditions of speed, air and temperature are obtained—but rather the severest kind of test over steep, sandy grades and mountains, dust and alkali, in high altitudes and low. Particularly does this performance show the remarkable features of the hot, fat spark so conspicuous in all Eisemann Ignition devices. At high altitudes such as were encountered during this tour, the mixture usually becomes very poor and hard to ignite. Then it is that such a spark as that for which Eisemann products are noted is absolutely necessary to prevent missing.

Herewith is shown a list of the cars and the type of Eisemann Ignition carried. Note that only three of these were



*In the case of one car, trouble of some sort developed which was thought to be a short circuit on the distributor block of the magneto, but upon investigation it developed that the trouble was not magneto trouble at all.

THE EISEMANN MA

Sales and General Off

Indianapolis, Ind.
514 North Capitol Ave.

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ependability 100% Pure
est Ever Attempted

nstruction. According to the telegrams 0 of which are reproduced herewith) nt by the various entrants there was ot a single case which required even oking at the magneto and most of the rivers have gone so far as to report at the magnetos never even missed shot.*



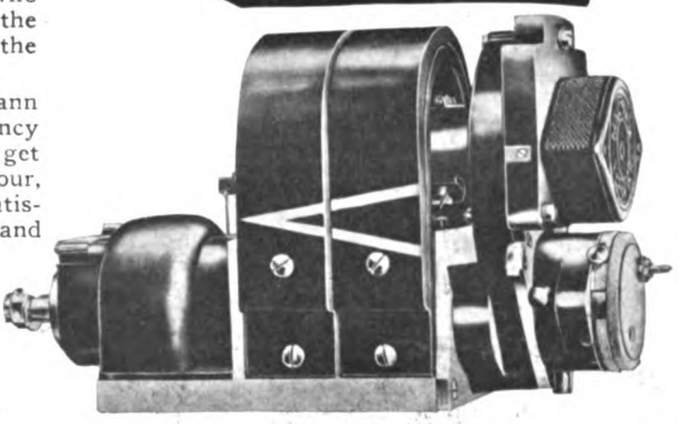


imported outfits, the other eight being manufactured in the American factory.

Pathfinder	**4 cyl.**	**EUR and D2U coil**
Haynes	**4 cyl.**	**EMR and DC coil**
Haynes	**6 cyl.**	**EMR and DC coil**
Premier (2 cars)	**6 cyl.**	**EUR and D2U coil**
American (2 cars)	**6 cyl.**	**EMR and DC coil**
Pilot	**6 cyl.**	**EMR and DCR coil**
Henderson	**6 cyl.**	**EMR and DC coil**
Empire	**4 cyl.**	**EM single ignition fixed spark**
Brown	**4 cyl. truck**	**EM single ignition fixed spark**

Just a glance at these telegrams will show conclusively in what regard Eisemann Ignition is held by the men who made this trip. Note the varying types of cars that used the ignition and remember that the showing was made under the severest conditions ever imposed upon an ignition system.

Then remember that if you are not already using Eisemann products, if you are not personally enjoying their efficiency and dependability, it will be much to your advantage to get in touch with us. What these stock systems did on this tour, thousands of others are doing every day for thousands of satisfied car and truck operators throughout this country and abroad.



ETO COMPANY

West 57th St., New York.

Detroit, Mich.
802 Woodward Avenue

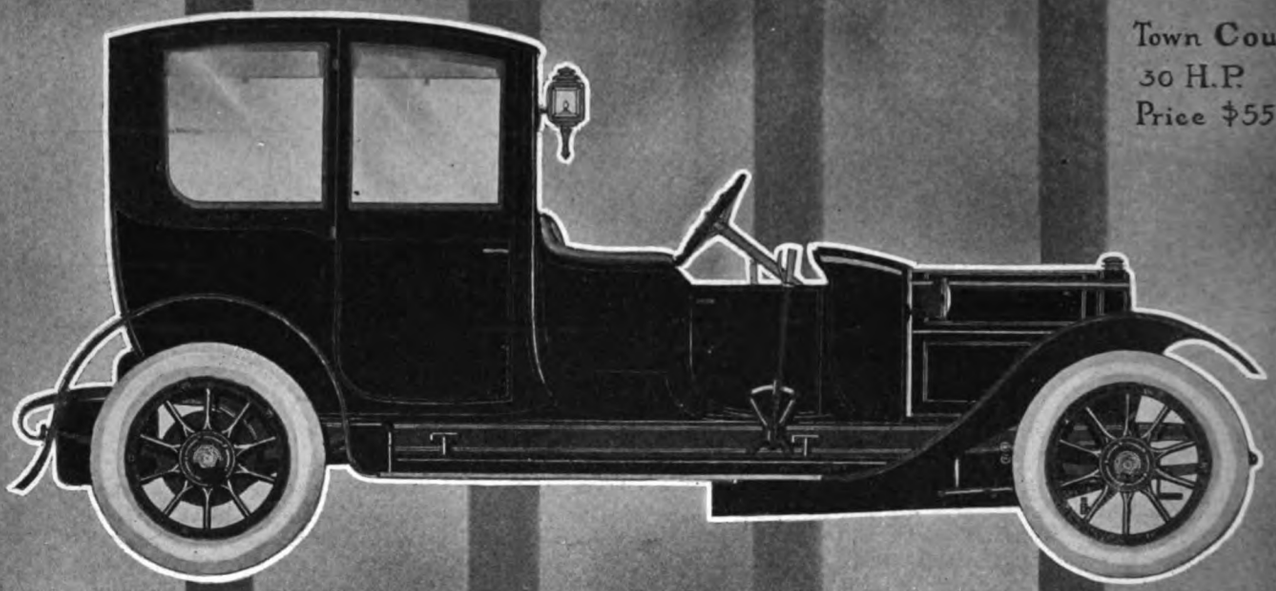
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-DEALERS-

Europe's Leading Car

Lancia

sells at AMERICAN PRICES



Town Coupe.
30 H.P.
Price $5500

The average would-be owner of a foreign car associates out-of-ordinary quality with prices beyond reason. He, in common with the majority of those who understand car value, wants such a car; but the prices of European products are prohibitive.

Lancia cars with all of the swing, dash and exclusive design, that only foreign designers and artizans can make possible, sell at American prices.

Lancia cars, made from steel that only Europe can turn out and with engineering features that America cannot touch, sell for American prices.

You, Mr. Dealer, have a market place for the Lancia, the car of durability, silence, flexibility, speed and rakish design. We will help you make your sales. Write and get our plan and proposition.

ADAMS-LANCIA COMPANY
235 West 58th Street, New York City

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Regal

Mr. Dealer—the Big Question Is—

Cars You Can Sell Easily Because of Quality and Price

You are in this motor car business to make the biggest profits possible this year. That means you *must* sell a *large number* of cars.

What cars sell in largest numbers?

The automobiles that offer efficient and lasting service, with low up-keep, at prices within reach of the majority of prospects.

That is why *Regal dealers* sold their cars easily and made large profits last year.

Regal Underslung Cars

Our cars sell in the "around $1000" class—the big market that is going to be bigger this year. The underslung construction presents selling features you cannot find in any overhung car at or near the price.

Investigate our claims. Let us prove why you should handle Regal Underslungs—*for your profit—increase this year.*

Regal Underslung Features

You can't *offer* a prospect a safer car. The underslung construction reduces skidding to a minimum. The "turning turtle" peril is eliminated.

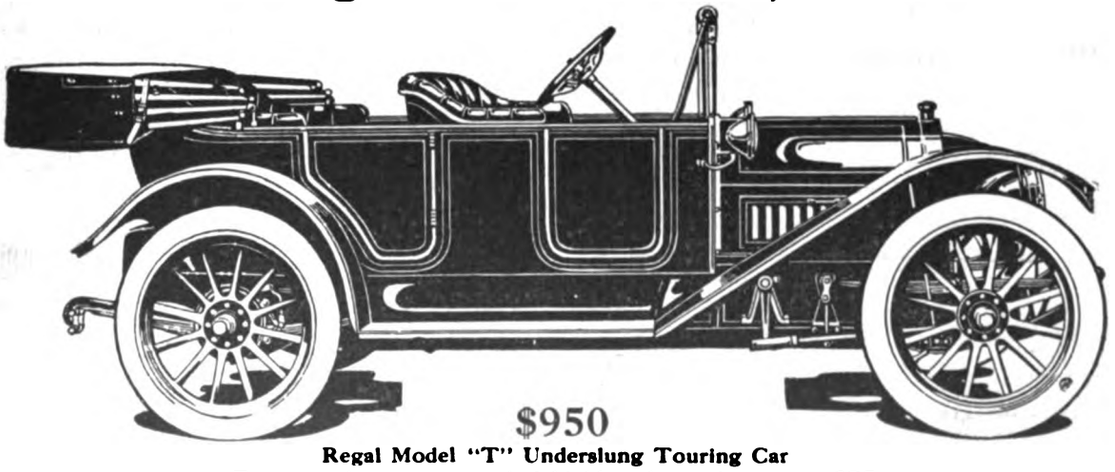
Remarkable ease of riding is achieved by our distinctive spring construction and method of attaching. The limited upward rebound of these springs saves tires. The straight line drive saves power and *gasoline.*

Our *engineers* have attained a remarkable degree of strength, durability, dependability and power in these cars.

We claim that in point of body design Regal Underslung cars are not surpassed by automobiles costing double or even treble the price. Compare the low, sweeping, rakish lines of a Regal with those of other cars and you will be convinced of the truth of our claims.

Now is the time to act. Write today for our catalog and dealer's proposition. We've got a story of vital interest to every dealer in the United States. Write for catalog. N.

The Regal Motor Car Co., Detroit



$950

Regal Model "T" Underslung Touring Car

Extra equipment, top, windshield and speedometer—$75

Other Regal Underslung Cars are Model "N" Roadster and our Colonial Coupe

(105)

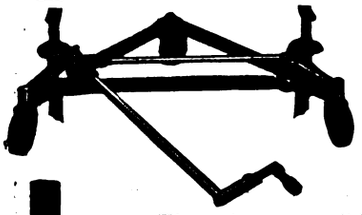
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Weaver Auto Twin Jacks
Save Time, Tires and Money

EVERY hour of the day and night Weaver Auto Twin-Jacks are saving money for thousands of public and private garage owners.

In the repair shop, storage room, paint shop, sample room or on the unloading platform they are paying for themselves over and over again in time, labor and floor space.

As tire rests in the private (and public) garage they are the most convenient ever perfected.



A CONVENIENT COMBINATION of TURNTABLE-TRANSPORTER LIFTING JACKS and TIRE RESTS

There is no possible contingency in the handling of pleasure cars in the garage which will not be quickly and easily overcome by an equipment of these Jacks.

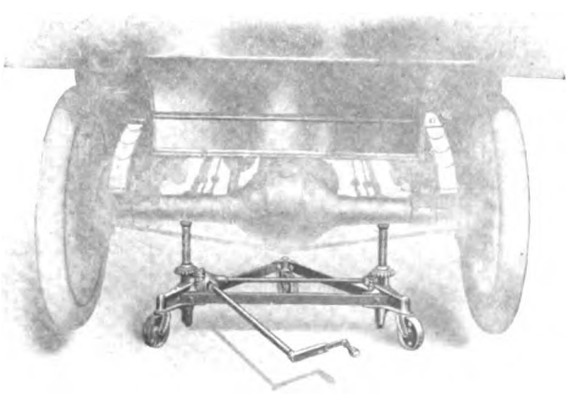
Rightly Made

Ball and Roller Bearings throughout; Malleable Iron and Steel; Wheel Base 34 inches; Lifting Capacity 400 to 1; Weight 47 lbs. each.

Two for $20.00
(One for each axle)

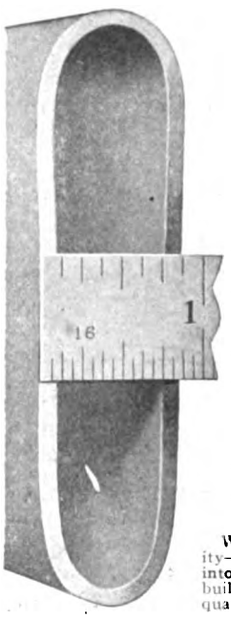
Liberal Discount to Dealers

Weaver Manufacturing Company
2167-71 South 9th Street Springfield, Ill.



MARATHON
SPEED ENDURANCE

A Red Tube Without Equal



That's a strong claim, you say. But we'll prove it—and we'll let you be the judge.

We will send you, on request, a sample section of a Marathon **stock** tube. Compare the quality, strength, thickness, toughness and life with any other tube made, and you'll say **Marathon** is without equal.

Then if you want further proof, we'll send you a full tube, and if it isn't as good as the sample, we'll make you a present of it.

Now if you really want to sell the **best tube made**, write us for a sample section.

Note the Picture

The picture is from an actual photograph of a Marathon 34 x 4 stock tube section. Note that it is almost an eighth of an inch thick by the rule.

That shows its great thickness.

Pure Gum, Too

Marathon is a **pure gum** tube. Not a compound tube. We use the **finest rubber**, and give it greatest strength, toughness and life by our special formula.

Best We Can Make

We put all the quality—and the finest quality—into Marathon Red Tubes that **can be put into a tube.** No expense whatever is spared in building Marathons. We will not limit the quality of either Marathon Tubes or Tires.

6-ply Stock

To obtain utter perfection, we use 6 plies of finest rubber. (9 plies in 4½ to 6 inch sizes.) That prevents the possibility of defect—and prevents slow leaks. Any possible, invisible defect in one ply is positively corrected by the others.

Weighed and Measured

Every Marathon tube is subjected to a double test for accuracy and uniformity.

The raw tube is first weighed and then measured. It must test to the fraction of an ounce and the eighth of an inch, or it cannot pass.

Heat Resisting

We use a special red coloring matter that renders the pure rubber highly heat resisting. The Marathon Red Tube positively will not stick to the casing no matter what the friction heat or the weather conditions.

Dealers

We want exclusive distributors in every locality for this tube—and the Marathon tire. **Write for a sample section and our special proposition.**

The Marathon Tire

Remember these facts about the Marathon Tire.

Marathon is hand built, very slowly, by experts. That insures utmost precision—insures perfect construction.

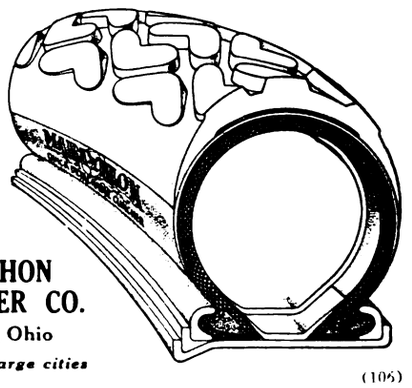
We use only Top-Test materials—the finest rubber and costliest fabrics. No expense is spared to make Marathon the Top-Test quality

We use a special Marathon single cure process, in open steam. That gives greatest rubber-toughness and unitizes the construction — all parts become one.

We apply a double tread—a thick plain tread, and a heavy angle non-skid above.

We concentrate the tread—put the rubber where the wear comes.

Write for our exclusive agency proposition.



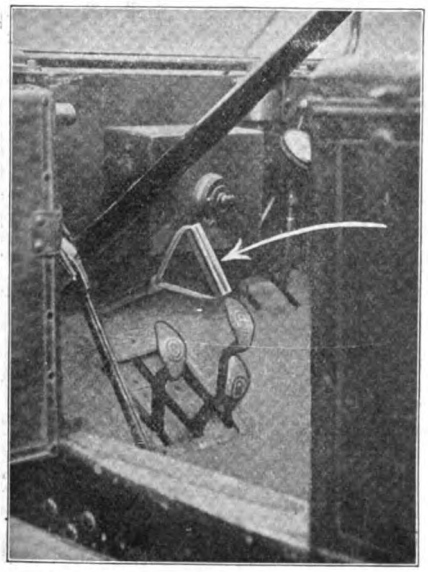
THE MARATHON TIRE & RUBBER CO.
Cuyahoga Falls, Ohio

Distributors in most large cities

(106)

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STOP!---SAVE MONEY



$9.00--FORD ENGINE STARTER--$9.00

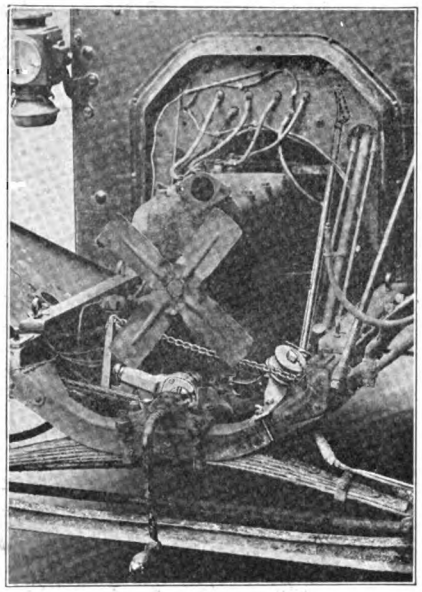
"It is out of sight," under the hood. All that shows is a small hand lever on dash. You do not have to leave your seat to start your FORD MOTOR when equipped with same.

All that is necessary is to pull the lever. Will POSITIVELY TURN YOUR MOTOR OVER EVERY TIME. With this starter YOU HAVE TWO STARTING DEVICES. YOU DO NOT HAVE TO REMOVE THE CRANK. **IT STAYS ON.**

FOR THE NEXT 60 DAYS TO THOROUGHLY INTRODUCE OUR STARTER WE WILL MAKE THE ABOVE PRICE.

NO MORE BROKEN ARMS. BACK KICKS ARE DANGEROUS.

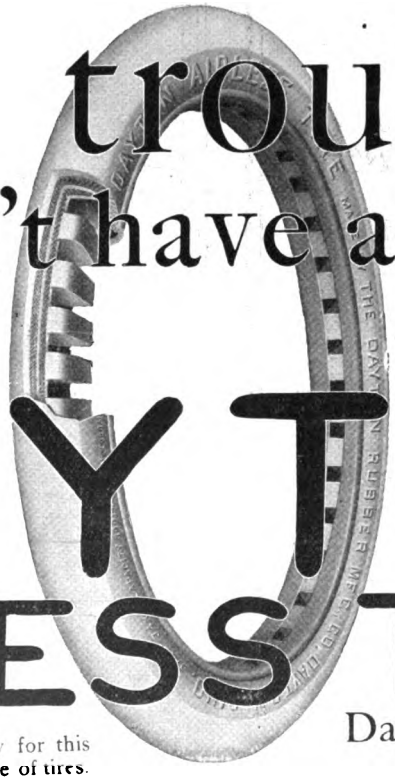
DIRECT ON RECEIPT OF PRICE.



$9.00---ORDER TODAY---$9.00

Bremer-Wilson Manufacturing Co.
1421 Michigan Ave., Chicago, Ill.

Tire troubles?
You can't have any—with



You can't have punctures or blowouts with an airless tire—there's nothing to puncture or blowout. And you can have ease and comfort (Dayton Airless Tires are smoother riding than pneumatics).

And you can—and do—have complete freedom from the worry, delay, vexation and expense that go with punctures and blowouts.

You're not only getting rid of tire troubles if you are using Dayton Airless Tires, you're getting longer wear, and saving the expense of extra tires, casings, etc. We guarantee Dayton Airless Tires for 5000 miles (8000 on a light car like the Ford).

They cost you more when you buy them; they cost you far less as you use them. Besides the big difference on tire repairs and accidents there's a definite sum of $102.70 to be saved by using Dayton Airless Tires. Ask us to show you how.

DAYTON AIRLESS TIRES

To Agents: Write us about territory for this practical sure-selling line of tires.

Dayton Rubber Mfg. Co.
Dayton, Ohio

DAYTON AIRLESS TIRE CO. 1878 Broadway, New York City
DAYTON AIRLESS TIRE CO. 589 Boylston St., Boston, Mass.
DAYTON AIRLESS TIRE CO. 88-94 West Mohawk St., Buffalo, N. Y
DAYTON AIRLESS TIRE CO. 2123 Michigan Ave., Chicago, Ill.
DAYTON AIRLESS TIRE CO. 332 N. Illinois St., Indianapolis

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Kelly - Springfield

Automobile Tires

We say that Kelly-Springfield tires are the only well-known automobile tires fashioned strictly by hand. We add that only the finest rubber composition has ever gone into them. It's easy for you to conclude what the 17 years' success of this combination means in extra mileage to the careful motorist.

Kelly-Springfield Tire Company

Corner Broadway and 57th Street, N. Y.

Branch offices in New York, Chicago, Philadelphia, Boston, St. Louis, Detroit, Cincinnati, San Francisco, Los Angeles, Cleveland, Baltimore, Seattle, Atlanta, Akron, O., Buffalo.

The Hearn Tire & Rubber Co., Columbus, O.
Bering Tire & Rubber Co., Houston, Texas.
Boss Rubber Co., Denver, Colo.
Todd Rubber Co., New Haven, Conn.
H. R. Olmstead & Son, Syracuse, N. Y.
Southern Hdwe. & Woodstock Co., Ltd., New Orleans, La.
Atkinson Tire & Supply Co., Jacksonville, Fla.
Central Rubber & Supply Co., Indianapolis, Ind.
C. D. Franke & Co., Charleston, S. C.
K & S Auto Tire Company, Limited, Toronto.

"I Want

a set of spark plugs that I won't have to bother—plugs that keep their efficiency long after the new has worn off—plugs that are free from carbon troubles and soot, and, above all, plugs that give good hot sparks and do not leak compression or break."

What your customers really want, Mr. Dealer, are Mezger Soot-Proof Spark Plugs. For years Soot-Proof Spark Plugs have set the standard for spark plugs and are the remedy for all engine troubles which inferior sparking may be responsible for. Soot-Proof users know no such troubles, they only know their Soot-Proof Plugs are the best they can buy, so they stick to them.

Next time a customer complains of poor sparking, recommend and sell him "Soot-Proof." He will remember the name and talk about them. Your spark plug trade will increase because of the greatest asset any article can have—satisfied users. Millions of Mezger Soot-Proof Spark Plugs are in use today.



C. A. MEZGER, Inc.

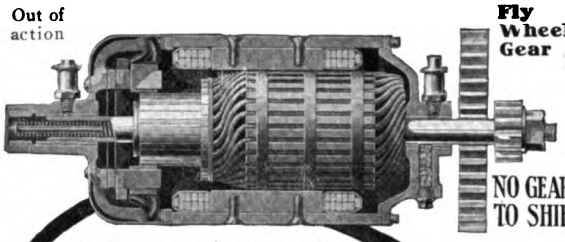
15 Canal Place
New York

Philadelphia, 1427-33 Vine St., Petry-Cassidy, Inc.
Chicago, 1430 Michigan Boulevard, F. E. Sparks.
Detroit, Ford Building, H. E. Butcher.
Portland, 329 Ankeny St., Hughson & Merton.
Seattle, 924 E. Pike St., Hughson & Merton.
San Francisco, 530 Golden Gate Ave., Hughson & Merton.
Los Angeles, 1229 South Olive St., Hughson & Merton.

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Out of action

Fly Wheel Gear



NO GEARS TO SHIFT

The Starter that works directly on the flywheel, eliminating all the intermediate mechanism commonly associated with engine starters.

The pinion on the armature shaft engages the flywheel gear when the switch button is pressed, turns it, and slips automatically and silently out of mesh the instant the engine starts.

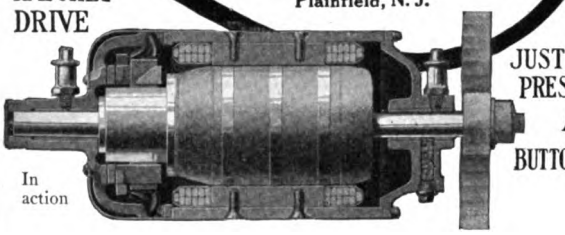
The RUSHMORE STARTER

Two sizes—"A." for the largest engines; "B." for medium sized engines. The Rushmore Dynamo is as automatic, free from mechanism, and reliable as the starter.

NO RATCHET DRIVE

RUSHMORE DYNAMO WORKS
Plainfield, N. J.

JUST PRESS A BUTTON



In action

Look to your Tires

YOU can take a *thousand miles of service* out of a set of tires by driving them insufficiently inflated over *ten miles of road.*

The New Positive Lock Stop Twitchell Air Gauge

Insures you against premature wearing out of tires.

It is TIRE INSURANCE FOR ONE DOLLAR



For Sale by Jobbers, Dealers, Garages or

The Twitchell Gauge Company
1202 Michigan Avenue CHICAGO

THE STURDY STUTZ
MADE GOOD IN A DAY

Stutz value is as consistent as its performance

The foundation of Stutz success has been built on that fundamental principle of successful motor car construction—***sturdiness.***

Its reputation—made in a day—was due to the splendid quality of all its parts and superior mechanical principles.

No important mechanical change has been made in the new Stutz Series "E" Car. Just a few details have been altered which make it sturdier than ever before, insure even greater service and power to its owners.

We have prepared a simple booklet containing illustrations and detailed specifications of our Series E Models. Compare any car at any price with the Stutz—on paper and on the road—and you'll soon learn where to make a certain investment in motor car satisfaction.

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Four-Cylinder, $2150 Six-Cylinder, $2400

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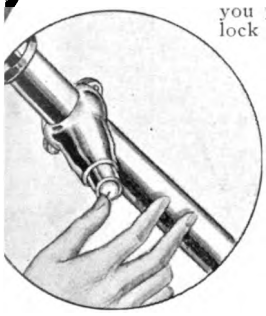
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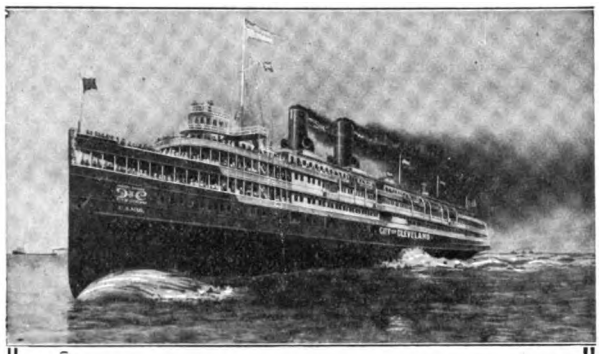
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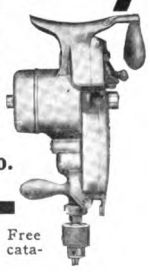
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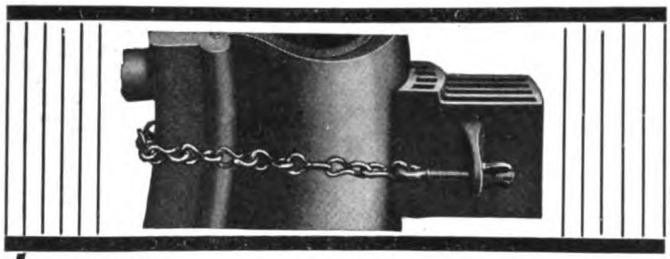
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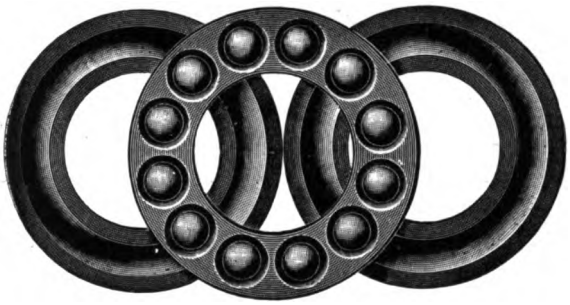
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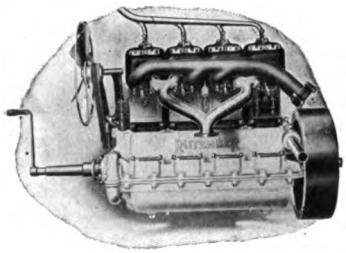
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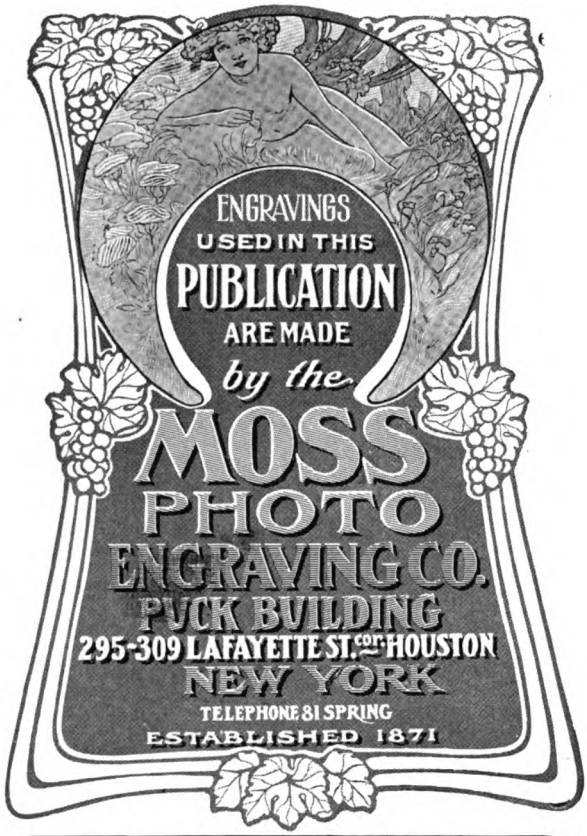
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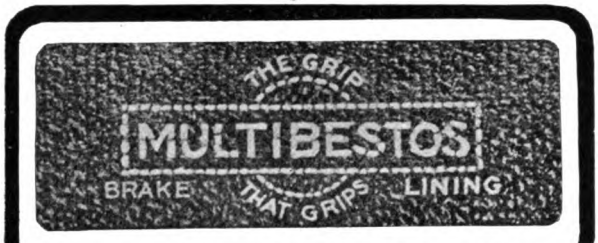


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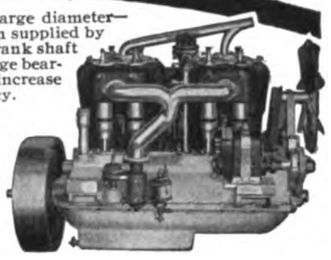
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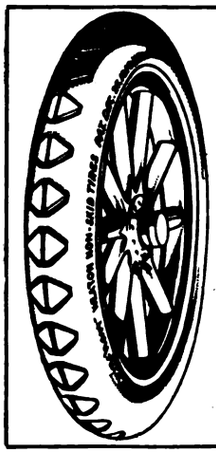
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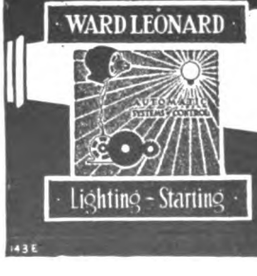
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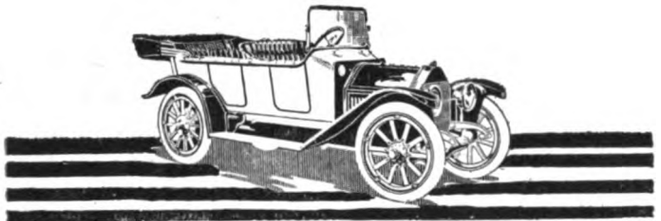
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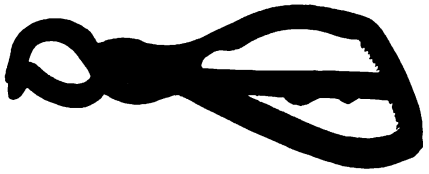
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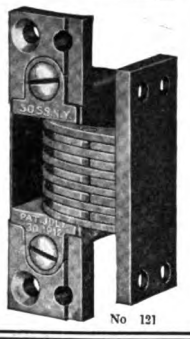
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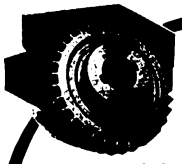
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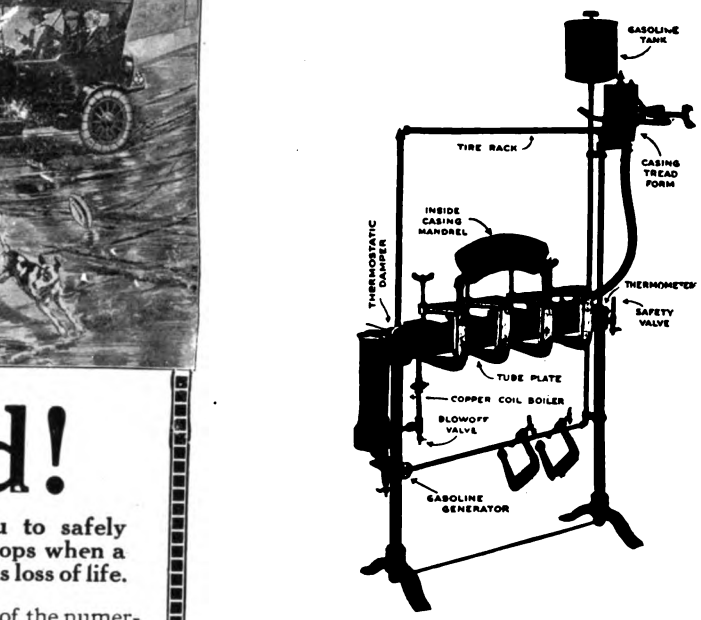
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There are a dozen well-known makes of tires.

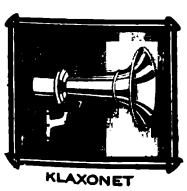
There are several speedometers, carburetors, magnetos, starters; all are equally well known, equally high-grade.

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But when the manufacturer comes to select his warning signal he faces no such latitude of choice.

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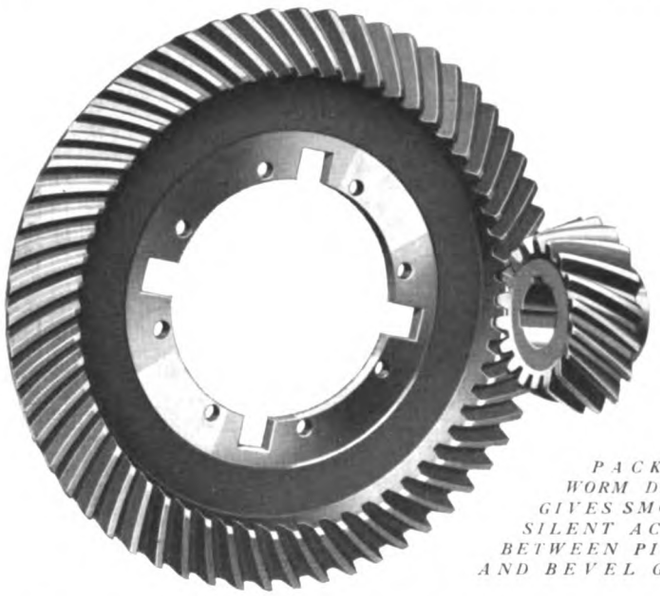
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NEW PACKARD WORM BEVELS MEAN A SILENT REAR AXLE



PACKARD WORM DESIGN GIVES SMOOTH SILENT ACTION BETWEEN PINION AND BEVEL GEAR

WORM BEVEL GEARS HAVE PRODUCED AT LAST THE SILENT REAR AXLE—THE AIM OF BUILDERS SINCE HIGH GRADE CARS WERE FIRST MADE—NOW AN EXCLUSIVE FEATURE OF THE NEW PACKARD CARS.

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TO ROUND OUT THIS RESULT PACKARD SPIRAL TIMING GEARS INSURE ALSO A SILENT FRONT END.

LEFT DRIVE, LEFT HAND GEAR SHIFT, CONTROL BOARD ON THE STEERING COLUMN.

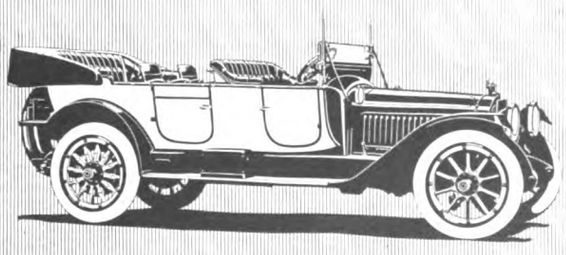
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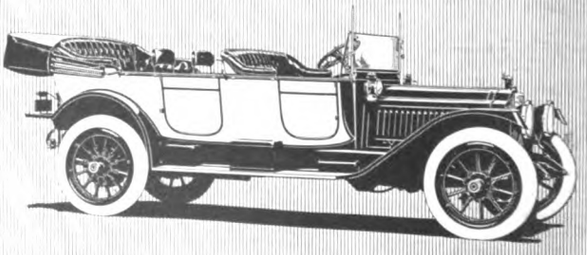
Ask the man who owns one

Packard Motor Car Company, Detroit

THE "38" TOURING CAR



THE "48" TOURING CAR



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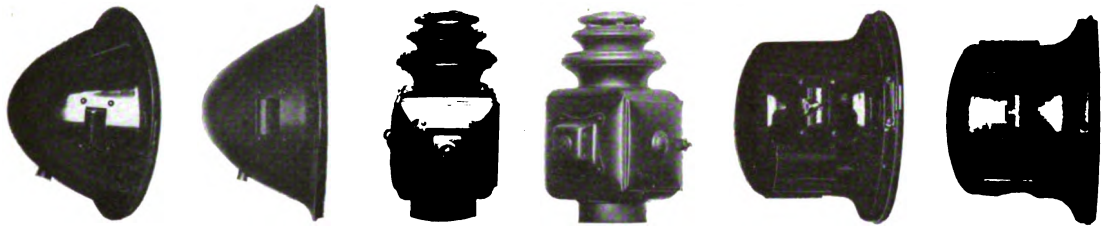
MOTOR WORLD

A Trade Paper Giving the World's Motor New

ol. XXXVI
No. 9

New York, August 21, 1913

Ten cents a co
Two dollars a y



No. 12 Lionoil No. 10 No. 13 No. 11 No. 8

A New Line of Black Finishes for Automobile Parts

From the complete line of Berry Brothers Raven black finishes, you can get just exactly what you need. These Japans are made to use on fenders, hoods, tool boxes and other parts requiring a high grade finish.

These finishes live up to the high standard of Berry Brothers quality and have features that adapt them particularly to automobile work.

They come in a variety of shades, you can get any finish from a perfectly flat black to a high gloss.

Raven No. 10—This is a rubberoid finish leaning toward the gun metal effect.

Raven No. 13—A perfectly flat black, no gloss.

Raven No. 11—This finish is about half way between the flat black of No. 13 and the rubberoid No. 8.

Raven No. 8—This is a true rubberoid.

Raven No. 12—A bright finish tending toward the brilliant.

Lionoil Raven—An excellent undercoat for fenders, hoods, tool boxes and other similar parts. It is a proven rust preventative. There is no better metal primer made.

In addition to these finishes, there is Raven Black which produces a brilliant black enamel finish.

These finishes all have excellent baking properties. With the exception of Raven Black, they will bake at either high or low temperature. This adapts them especially for use on automobile lamps and other articles which must be baked below the melting point of solder. Raven No. 10, No. 13, No. 14 or Lionoil Raven will air dry.

Our consultation department offers you the services of an expert. We will help you choose the finish best adapted to your needs; furthermore we will show you how to obtain the best results from its use.

Write us for more information.

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Largest Manufacturers of Varnishes and Japans in the World

FACTORIES : Detroit, Mich., and Walkerville, Ont.

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New Automatic Shock Absorber Has Three Distinct Spring Controls

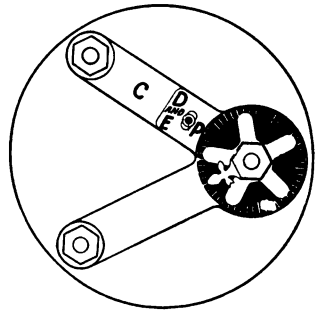
Roads can be fairly divided into three classes—the good—the moderately rough—and the abnormally bad.

Each kind of road really demands a separate and distinct spring control, if the action of the springs is to be kept normal at all times.

It was in recognition of this need, which no shock absorbing device fulfilled, that Mr. E. V. Hartford designed the New Automatic Three Degree Friction Absorber, which adjusts itself to meet each condition separately and provides the correct degree of tensional control for each.

When travelling over smooth roads, the center arm "C"—shown in the diagram below—is the only arm that is working. This is the first control and it is designed to successfully eliminate the slight but noticeable spring oscillation from the little inequalities found on even the smoothest road.

The arms "D" and "E" remain stationary until a rough stretch of road or a bad cross-walk is encountered. Instantly the arm "C" by means of the pin "P"—which is an integral part of "C"—picks up and operates arm "D" on the back side of "C" thus doubling the amount of controlling friction This is the second control.



Should the road grow worse or the crossings extremely severe, arm "E" is also brought into immediate play, thus giving the full effect of the absorber and supplying a third control calculated to meet and overcome the most violent rebound of the car's springs.

The New Automatic does not deviate from the tried and proven design of the original Truffault-Hartford, but instead of one constant frictional tension, provides three distinct tensions, the advantage of which is apparent.

Increased comfort and longer tire wear—less upkeep expense—and all around better car satisfaction are realized through the use of the

New Automatic

Truffault-Hartford

SHOCK ABSORBER

When attached it presents the same neat appearance of the other Truffault-Hartford models, which, unlike other devices, do not detract from the appearance of the car. $60 per set of four. Further interesting information on this new model and the four other Truffault-Hartford models may be had by writing for our booklet. Five models, $15 to $60 a set.

Insist Upon Truffault-Hartfords on Your New Car

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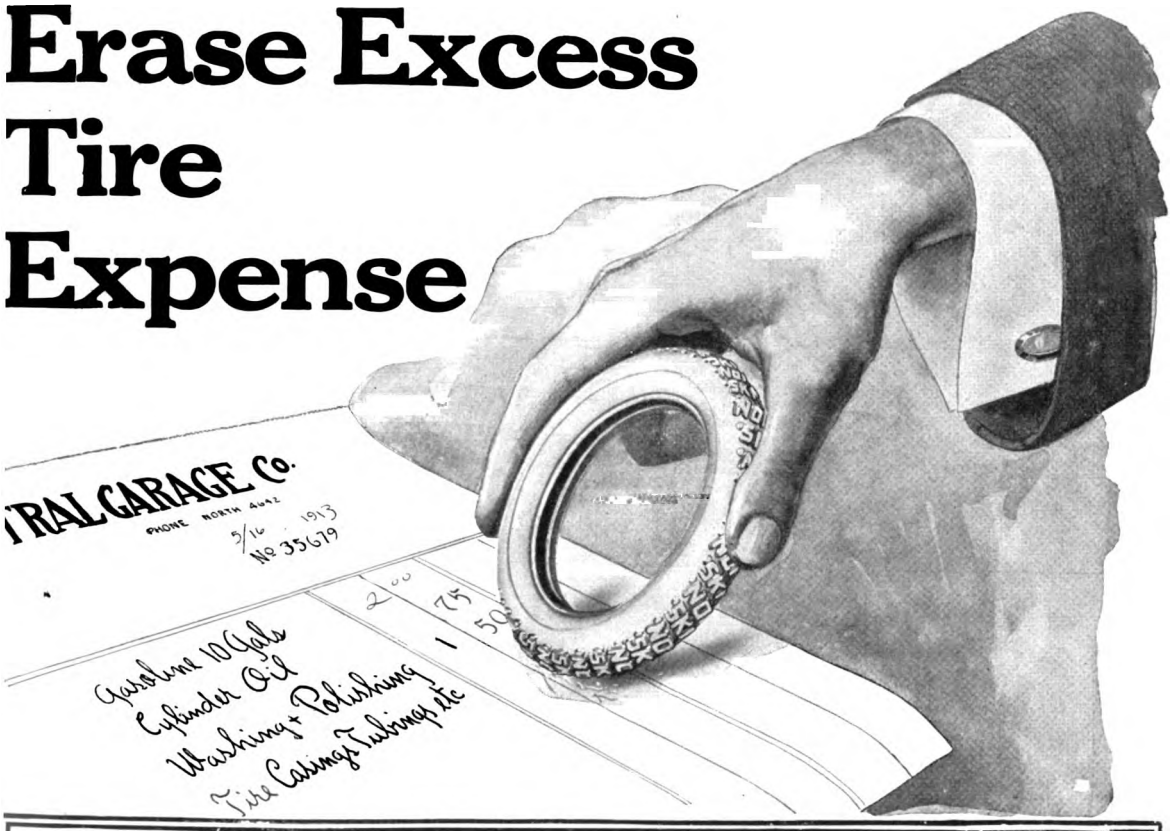
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Erase Excess Tire Expense



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Firestone Non-Skid Tires are today erasing a big proportion of garage bills for experienced motorists everywhere. Charges for patching, vulcanising, and retreading are being reduced or eliminated entirely.

You motorists who have never tried Firestone Non-Skid Tires should ask for a copy of "What's What in Tires" by H. S. Firestone, a book by a tire authority written from the motorist's standpoint. Write for it.

Firestone pneumatic tires are guaranteed when filled with air at the recommended pressure and attached to rims bearing either one or both of these inspection stamps. When filled with any substitute for air or attached to any other rims than those specified our guarantee is withdrawn.

THE FIRESTONE TIRE AND RUBBER COMPANY

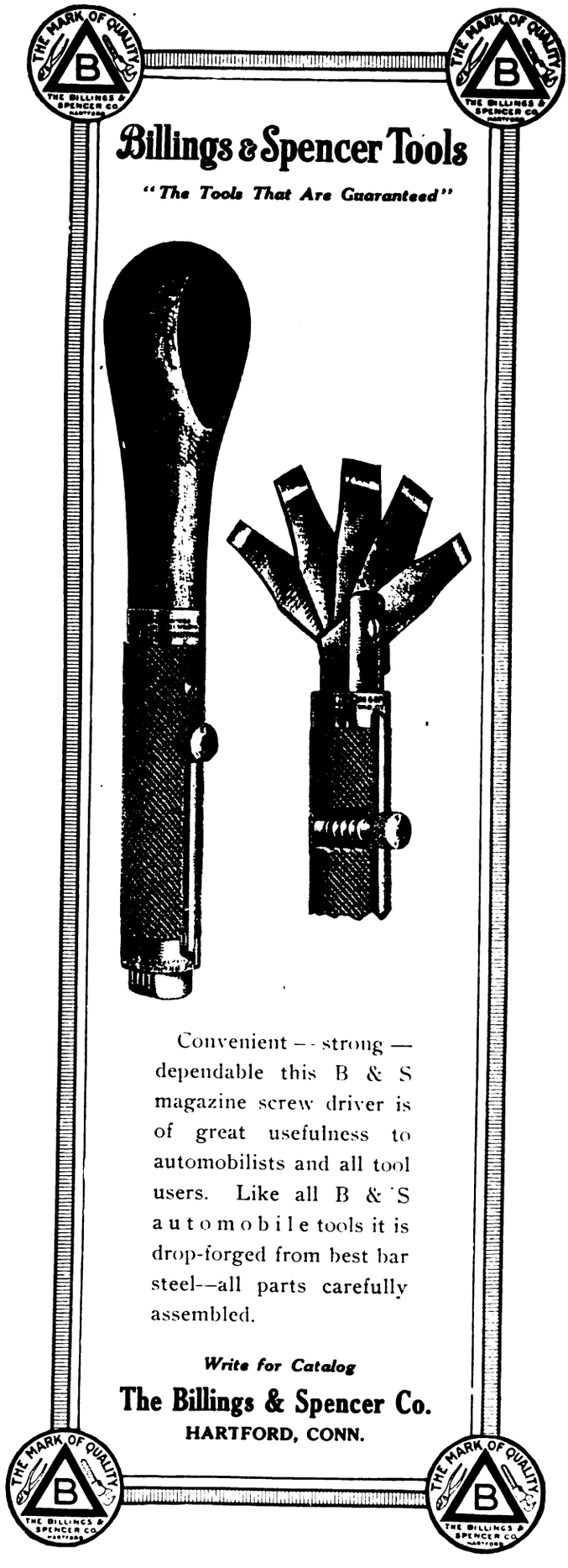
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AKRON, OHIO **Branches in All Large Cities**

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Non-Skid and Smooth Tread Tires

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The Billings & Spencer Co.

HARTFORD, CONN.

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Columbia Lubricants Co. of N. Y.
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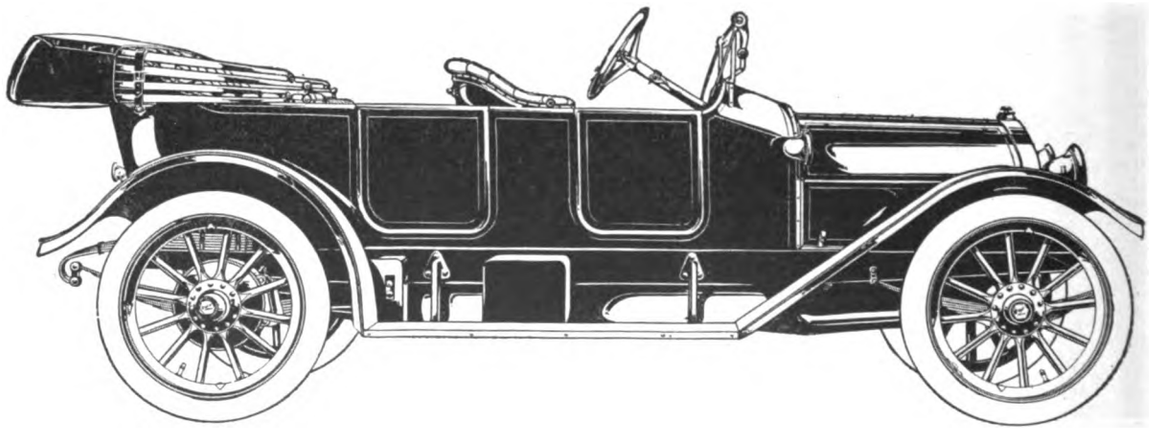
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THE motor is *larger;* the wheelbase is *longer;* the tires are *larger;* the tonneau is *roomier;* the equipment is *better*—including such costly additions as *electric lights;* the body is *more handsomely finished,* in rich dark Brewster green, with heavy nickel and aluminum trimmings. In fact, in every single and individual respect this is an *improved* car at a *reduced* price.

$950 Completely Equipped

With Gray & Davis Electric Starter and Generator—$1075 f. o. b. Toledo

35 horsepower
114-inch wheelbase
Electric head, side, dash and tail lights
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Mohair top, curtains and boot
Stewart Speedometer
Electric horn
Flush U doors with disappearing hinges



1914 Catalogue on request. Please address Dept. 50

The Willys-Overland Company
Toledo, Ohio

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MOTOR WORLD

Vol. XXXVI New York, U. S. A., Thursday, August 21, 1913 No. 9

NEW YORK LICENSE TAGS TO BE CHOCOLATE COLOR

White Figures on Brown Background Specified in Contract Just Let—Five Figures on a Plate and Index Letters.

Except for a difference in color, the New York State license plates for 1914 will be very little different from the plates now in use. Instead of a blue background, the new plates will have a chocolate colored background; the distinguishing figures will be white, as heretofore. The contract for the new identification tags was awarded to the Manhattan Supply Co. of New York City on Tuesday by Secretary of State Mitchell May, and the specified contract price was 38 cents a pair.

Although at one time it was proposed to alter the size of the plates and the style of the figures in order to make the lettering more easily read, the plates are to remain the same size, as do the figures upon them; the plates measure 16 x 6 inches and the figures will be four inches high with each stroke five-eighths of an inch in width. As is the case with the present plates, there will be only five figures on each of the new ones, the system of adding index letters in order to reduce the number of necessary figures being continued. The first 9,999 plates will have no index letter; thereafter, however, each series of 10,000 plates will be distinguished by an index letter, A, B, C and D being used in their natural order. The new plates will be ready for delivery by October 1st, though the fiscal year of the department dates from February 1st.

Thus far this year 120,000 license tags have been issued, two going to each owner. For the 1914 season 150,000 tags will be required, a gain of 30,000.

At the same time the contract for plates was awarded, Secretary of State May awarded the Union Badge & Decorating Co., of New York City, the contract for furnishing the chauffeur's badges; they are to cost the State seven cents each.

Winton to Equip with Electric Starters.

By way of supplying the increasing demand for electric engine starters, the Winton Motor Carriage Co., of Cleveland, Ohio, one of the oldest, if not the oldest, user of compressed air as a starting medium, is preparing to equip its cars on demand with the U. S. L. electric lighting and engine starting system instead of the pneumatic system that has been used for so long. The action, it is stated, is not to be taken as presaging general adoption of the electric system to the total exclusion of the pneumatic system. As heretofore, the latter will remain standard equipment on all models specifications of the U. S. L. system increasing the list price of the car to which it is attached by $200. Delivery of cars equipped with the electric system will be commenced about November 1st.

Curtiss Develops Automobile Engine.

Without previous intimation of its intentions, the Curtiss Aeroplane Co., of Hammondsport, N. Y., has quietly developed its six-cylinder aeroplane engine for use in automobiles, and is prepared to turn it out in quantities for that purpose. As might be inferred, the motor is exceptionally light and weighs complete but 275 pounds, despite the fact that it is water-cooled and develops no less than 70 horsepower on the brake. Cylinders measure 4 x 5 inches and the construction is standard throughout, the flow of gases being controlled by the familiar poppet valves.

Chase Water-Cooled Truck Denied.

Despite recurrent rumors to the effect that the Chase Motor Truck Co., of Syracuse, N. Y., is preparing to bring out a water-cooled commercial vehicle to supplement or to replace some or all of its air-cooled trucks, there is no truth in such statements, according to one who has authority to say so. It is stated that no change is contemplated in the cooling.

COURT DECLARES CITY MAY REGULATE TAXICAB SERVICE

Hard Fight Against New Ordinance in New York Ended in Favor of Municipality — Injunctions Overturned and Claims Denied.

That the right of a municipality to regulate the taxicab service which uses the city streets is undisputed, is the gist of a decision handed down yesterday, 20th inst., in the Supreme Court for New York county by Justice Samuel Seabury in actions brought by various taxicab companies of New York City to prevent the enforcing of an ordinance which was to have gone into effect August 1; temporary injunctions which were secured a day or two prior to the date when the ordinance would have become effective are set aside and the Bureau of Licenses hastened to place cab stand signs which had been withheld.

The ordinance does away with privately rented stands in front of clubs and hotels, establishes lower rates of fare and places the entire cab service completely under the regulation of the civic authorities; the opponents of the measure, mostly those who had paid for the privilege of maintaining stands in front of hotels and clubs, objected on the grounds that the rates were confiscatory; that the law is unjust; that expensive meters are required; that unreasonable penalties are required for incorrect meters; that drivers are subjected to unreasonable requirements; that the provisions for revoking licenses are unreasonable; that it is unreasonable to permit drivers to solicit fares only when seated in their cabs; that it is unreasonable to refuse to permit anyone to sit in front with the driver, and that the law is unconstitutional. It also was claimed that the ordinance was hastily adopted and that the Board of Aldermen went beyond its jurisdiction and invaded the constitution of the United States.

In his opinion, covering 39 typewritten

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pages, Justice Seabury said that "the ordinance was not hastily adopted. Careful and thorough examination and investigation of the whole subject matter involved preceded the framing and adoption of the ordinance. Upon the whole, the ordinance must be pronounced a serious, well-considered attempt to remedy nuisances which have grown to such an extent as to make an application of a remedy imperative."

As regards the charge of discrimination made by the big taxicab companies, Justice Seabury ruled that the old system was as unjust as the new one is claimed to be, and that because of conditions which prevailed some remedy was necessary. He added: "The effect of provisions of the old ordinance and the licenses granted pursuant thereto gave to hotels and other owners of buildings abutting on the public streets the right to maintain private hack stands. These special privileges in the streets of the city enabled those in front of whose property special hack stands were established to sell for their private profit the right to use a part of the public streets.

"Licenses issued pursuant to such ordinances discriminated against the rights of other public hackmen than those who made contracts with the abutting owners to enjoy equal rights in the public streets. It is in evidence before the court that an investigation made by the Commissioner of Accounts shows that over $860,000 is paid annually to the hotels and other abutting owners for the sale of these privileges, and the report of a commission appointed by the mayor to investigate the whole subject of cab service estimated the amount paid for such purposes as not less than $500,000."

It was claimed that under the new rates taxicabs cannot be operated at a profit, but evidence indicated that smaller operators are making money, exacting only the two-passenger rate, whereas the ordinance permits a rate about two-thirds higher for three and four persons. Regarding rates, Justice Seabury said:

"The affidavits submitted upon these motions fall far short of satisfying the court that the rates of fare prescribed are unjust and unreasonable. On behalf of the defendant, evidence is adduced to show that such motor driven vehicles can be operated at a profit upon the rates prescribed."

Since the injunctions were secured conditions in the metropolitan taxicab service have been more or less chaotic, for while some of the cabmen, mostly the smaller operators, accepted the new ruling and were licensed, many were not licensed and charged the old rates. The big taxicab companies may appeal, but since the city hastened to post its cab stand signs it will now be a question of getting them taken down instead of preventing their being put up.

SEARCHLIGHT ASSETS GO TO ONLY BIDDER FOR $175,000

Protective Committee Buys in Gas Company's Property at Receiver's Sale—Takes Entire Plant but Guards Future Plans.

But one bidder appeared on Thursday last, 14th inst., when the assets of the Searchlight Gas Co. were put up at receiver's sale in Warren, Ohio, and the entire property of the company was knocked down to what was termed the Searchlight Protective Committee for the round sum of $175,000; this committee included a representation of the creditors, most of which are banks, and was otherwise made up of the officers of the embarrassed corporation. Horace B. Pearson, general manager of the company, is the receiver.

The assets that were sold include a 1½-story building, about 50 x 100 feet, in Warren, plants in Canton, O., Chicago, Minneapolis, Bexar county, Tex., and Harrison, N. J., and a quantity of tanks. The property had been appraised at $424,000 as a going concern and was estimated as being worth $350,000 as a non-going company, and against the corporation are creditors' claims of more than $200,000. The consummation of the receivership will, it is stated, leave little, if anything, for the stockholders and will probably not afford payment in full for the creditors.

What is to become of the business has not been divulged by those who have secured the assets. The failure came in January last following the Searchlight victory over the Prest-O-Lite Co. in a long line of patent litigation; the petitioner was the Continental and Commercial National Bank, of Chicago, which held notes the face value of which was $50,000. The actual bidder at the sale was John S. Rountree, of Chicago, who has acted as attorney for the Searchlight company on other occasions.

Connecticut Electric "Goes into" Cyclecars.

Following preparatory work, carried on in a very quiet manner, the American Cyclecar Co., which was incorporated early in the year under Michigan laws with a nominal capital of $1,000, has been as quietly taken over, lock, stock and barrel, by the Connecticut Electric Mfg. Co., of Bridgeport, Conn., which, in turn, is owned and controlled by A. H. and I. B. Trumbull. A. H. Trumbull has been elected president of the company, which will retain its original name; Harry J. Stoops has been made vice-president and I. B. Trumbull secretary and treasurer. Coincident with the transfer of stock, the capitalization was raised from $1,000 to $200,000, with an ultimate prospect of $500,000 in view. The car that is to be produced will have a four-cylinder water-cooled motor with cylinders measuring 2⅞ x 4 inches, 80 inches wheelbase and a tread of 44 inches; the body will accommodate two passengers seated side by side. It is proposed to list the car at $390 with equipment including top, windshield, electric lights and tools.

Chevrolet Incorporates in New England.

Following the snuffing out of the name Little by the absorption of the Little Motor Car Co. of Detroit, Mich., by the Chevrolet Motor Co., its near relation, and the renaming of the Little car Chevrolet, the Chevrolet company has perfected plans for writing the name of its product still larger. To take the place of the Republic Motors Co. of Massachusetts, which heretofore acted as sole distributer in the New England territory for both Little and Chevrolet cars, there has been incorporated the Chevrolet Motor Co. of New England, with $10,000 capital stock. W. C. Durant, who is the moving spirit behind Chevrolet affairs, is vice-president of the new company, and W. C. Sills is president and treasurer. The old quarters of the Republic Co. in the Motor Mart in Park Square, Boston, will be retained.

Bosch Opens Eastern Territory Branch.

The Bosch Magneto Co., of New York City, has opened a branch which will handle the Bosch business in what it terms the "Eastern territory," a field including all States east of the Mississippi and Ohio rivers; the branch has been located in the Bosch building, 223 West 46th street, New York City, and is under the management of Alfred J. Poole, formerly assistant chief engineer of the Bosch company.

Stearns Opens Coast Factory Branch.

The better to care for its Pacific Coast trade, the F. B. Stearns Co., of Cleveland, Ohio, has opened a factory branch at 742 South Olive street, in Los Angeles. The location is only temporary, however, as land has been purchased and the erection of a suitable building will be commenced immediately. J. H. Duffee, long Western manager for the Stearns company, has been placed in charge.

Ford Adds Another Assembling Plant.

With assembling plants already established in a great many of the more populous trade centers, the Ford Motor Co., of Detroit, Mich., has added still another to the long list. An 11-story building to cost approximately $600,000 will be erected on Fifth street in Minneapolis, Minn.; work will be commenced at once.

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URT POSTPONES ACTION ON WALPOLE RECEIVERSHIP

lvises Disputants as to Additional Receiver to "Get Together" and Seek Amicable Adjustment—Creditors Favor Advisor.

nstead of making definite decision in the tter of the appointment of a coreceiver the Walpole Tire & Rubber Co., of Wal- le, Mass., which failed August 2, the Fed- l court in Boston, when the matter came for a hearing Saturday last, 16th inst., journed the case for a week with the ad- nition to the creditors that they en- avor to arrive at a decision which would satisfactory to as large a number of se concerned as possible.

The court intimated that if the minority editors, who are in favor of the appoint- nt of a coreceiver, and the stockholders n agree on a man who would not be an- gonistic to the present receiver he would nsider the appointment of an additional icial; he suggested that the stockholders d creditors confer during the interven- g week and suggest the names of some en acceptable to both sides of the con- oversy.

On Friday of last week the creditors, out 200 in number, met in New York ty and discussed the question, and the ntiment of those present was that Robert Fisher, the company's treasurer, who was med receiver, is quite sufficient for the casion, but it was suggested that the cred- ors name a committee from their number advise the receiver. Fisher stated he ould be only too pleased with such an ar- ngement.

Certain of the Walpole stockholders, how- er, desire that someone favorable to their n particular interests be given a hand in e receivership proceedings and object to e course followed when the failure of the mpany's bank brought down the tire mak- s. These stockholders demand an audit- g of the Walpole accounts and the making blic of its exact financial standing.

Michigan Failure Drags Down Dealer.

Following the failure of the Michigan uggy Co., which had discounted notes iven it as future payment on cars, the estern Implement Co., of Sioux City, Ia., as made the object of a bankruptcy peti- on yesterday, 20th inst., by three Detroit nd Cincinnati banks, which hold the im- lement company's paper to the amount of 0,000; a temporary receiver was appointed. his sum is said to represent but a part of aper to the extent of $250,000 which the nplement company, also a dealer, gave the buggy company in payment for 200 cars which it never received. Instead of hold- ing the notes the manufacturer discounted them and the banks demand their money.

Little Disclosed at Midland Hearing.

Although the hearing of the creditors of the defunct Midland Motor Co., of East Moline, Ill., which was called for August 5th, was continued over three days and some 25 witnesses were examined, little of an enlightening nature has been permitted to escape, though it is understood that as the result of preferential payments made to creditors in the form of cars shipped to them in lieu of cash, several suits will be instituted seeking to compel the return of the cars. The hearing has been extended to August 29th, when it will be taken up again in the Federal Building in Peoria.

Carburetter Coming from Rochester.

Charles Pembroke, who is the moving spirit behind the Key Lox Mfg. Co., of Rochester, N. Y., has quietly developed a gasolene carburetter and proposes shortly to enter the trade with it. Although little regarding the construction of the device has been permitted to become public, it is understood that it operates on a somewhat new principle, which insures a considerable increase in mileage per gallon of fuel.

Commercial Vehicles from Johnstown.

For the purpose of building commercial vehicles and motor-driven fire apparatus, the Johnstown Motor Car Co. has been formed in Johnstown, Pa. R. R. Herchelroth, who owns a number of patents around which the vehicles will be built, is the prime moving spirit behind the venture. A factory soon is to be erected.

Michigan Welding Adds to Factory.

To permit of needed expansion, the Michigan Electric Welding Co., of Detroit, just has completed an addition to its factory, which practically doubles the floor space. Drag links, brake rod assemblies, torsion and tie rods, brake expander cams and a variety of other electrically welded parts are produced.

Bayerline to Visit Pacific Coast.

J. B. Bayerline, president and general manager of the King Motor Car Co., of Detroit, departed Saturday last for a swing around the trade circle, which will include the Pacific Coast. He will be absent about four weeks.

Dash Maker "Goes Into" Taxicabs.

The Benham Mfg. Co., of Detroit, Mich., which produces wood dashes in considerable variety, is preparing to place on the market a taxicab.

KLAXON WOULD STOP TALK OF HUDSON CAR SALESMEN

Sues Because it Claims "Boosting" of Hudson and its Equipment "Boosts" Sparton Horn—Latter Charged with Patent Infringement.

Because, so the Lovell-McConnell Mfg Co. claims, the sales activity of the A. Elliott Ranney Co., Hudson distributer in the metropolitan district, is damaging it by advertising the Sparton horn, an alleged infringer of the Klaxon patents, the Klaxon company brought suit this week in the United States District Court for the Southern District of New York; the Lovell-McConnell company charges the Hudson distributers with infringing the Klaxon patents, Nos. 923,048, 923,049 and 923,122, granted May 25, 1909, and seeks an injunction and damages.

The Sparton horn, which is made by the Sparks-Withington Co., of Jackson, Mich., also is the device at issue in other suits brought some time ago in the same court against three New York automobile and accessory houses, and the reason for the additional suit is made plain in a statement by F. Hallett Lovell, Jr., president of the Lovell-McConnell company, in which he says that the suit is not for pecuniary damages.

"The principal damage in cases of this kind," said Lovell, "is done by the salesman in demonstrating and praising the infringing horn as one of his talking points in selling his car. What a car seller says is especially damaging because his attitude is naturally that of a disinterested intermediary who is not trying to sell the horn. Moreover, the inquirers he talks to are practically all prospective horn users and his demonstrations of the infringing horn outnumber his car sales about 20 to 1.

"To prevent this damage is more important to us than the considerable profits which might be recovered in case the horn could be proved to be the decisive factor in effecting the sale of the car."

Traveller Prepares to Launch Cyclecar.

Following its organization last March by J. P. Lavigne, the Traveller Motor Car Co., of Detroit, Mich., is preparing to market a light vehicle which will come in the category of the cyclecar, quotations on parts already having been asked for. At the time of its formation, the Traveller company acquired property on Grand River avenue comprising a two-story brick building 80 x 100 feet, which since has been partly remodeled and made more suitable for the production of cars.

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TEXAS OIL'S EARNINGS IN YEAR EXCEED $25,000,000

Net Income Nearly Half This Amount and $1,620,000 Goes to Dividends —Surplus $7,500,000 — Other Items in Annual Statement.

For the fiscal year which ended June 30 last the Texas Co. earned the gross sum of $25,882,863.91, which income is indicative of an unusually profitable business year, even though the company in its annual statement just issued says that "the apparently abnormal showing of gross earnings may be attributed in part to increased value of stocks of oil and of producing properties." As is shown in the accompanying table, of this gross sum $1,620,000 was applied to the payment of dividends, while $5,043,123.36 was carried to the surplus. The surplus at the end of the preceding fiscal year was only $2,456,876.64, less than half the sum carried over this year, and which makes the surplus now $7,500,000. The net earnings were $12,044,218.85.

The company's outstanding capital stock is but slightly in excess of its gross earnings, being $27,000,000, although there are included in the liabilities $14,000,000 of 6 per cent. convertible debentures and $2,400,000 of 6 per cent. serial notes outstanding. As compared with accounts and bills payable to the amount of $6,531,248.14, there are accounts and bills receivable to the amount of $14,395,634.48. In the assets are included bonds and mortgages valued at $3,026,000.

The plant account, which means investments in real estate, leases, rights of way, pipe lines, tankage, terminals, distributing stations, natural gas wells and equipment, is valued at $28,895,452.59, and the crude and refined oil in stock and in process of manufacture is entered in the assets at $16,703,363.61. On the liability side of the account is provision for the notes and debentures in the form of $360,000 for interest on the latter and $72,000 as interest in the former, while for taxes the sum of $143,534.78 is set aside. Bad accounts are cared for by the setting aside of $250,000 for this item. The stock, debentures and outstanding notes total $43,400,000, but this sum is exceeded by the $45.598,816.20 valuation which the company places on two single items of physical assets, its plant valuation and its stock of manufactured and unfinished product. The cash in hand is placed at $2,233,347.54 and the reserve for sinking fund and depreciation $8.761,186.60. The balance of the sheet is $67,517,969.52.

The company has made application to list on the New York Stock Exchange $3,000,000 additional stock and $2,000,000 of the debenture bonds, all of which is included in the statement; the application is the final step in the transfer of the Producers' Oil Co. to the Texas Co. Stockholders in the Producers received one share of Texas for each share of Producers and one Texas debenture bond for each Producers bond held.

Abbott Discontinues Detroit Branch.

Discontinuing its factory branch in Detroit, Mich., the Abbott Motor Car Co. of that city has placed the business in the hands of the Gaston-Richardson Co., which will act as the agent for the company. The new firm is composed of George T. Gaston, who has held several municipal positions and is making his entry into the automobile business, and Douglas C. Richardson, who for two years was associated with the local branch of the Warren Motor Car Co. The present quarters at Jefferson avenue and Brush street will be retained.

Town Again Heads Duplex Company.

At the annual meeting of the stockholders of the Duplex Power Car Co., of Charlotte, Mich., which was held on Thursday last, all the old officers with the exception of two were re-elected; Frank P. Town re... president, Frank L. King, vice-pres... and M. J. Lamson, secretary. T. L. G... replaces James H. Brown as treasurer ... as a member of the board of direc... from which K. S. Ranger also retires; ... place is taken by M. Bollstrom, of E... Creek, the new board of directors in... these men and George A. Williams ... H. H. Bryan.

Gemmer to Produce Engine Starter.

George A. Gemmer, who nearly a ye... ago retired from participation in the affa... of the Gemmer Mfg. Co., of Detroit, Mich... to take up the production of an engi... starting device, has incorporated the Ge... mer-Detroit Starter Co., with $200,000 ca... tal stock. L. W. Smith is associated w... Gemmer in the venture.

American Safety Changes Corporate Name.

In order the better to distinguish its bus... ness, the American Safety Appliance Co... of Milwaukee, Wis., has changed its co... porate title to Milwaukee Die Casting Co... The company produces aluminum castings for lamps.

STATEMENT OF TEXAS CO. FOR YEAR ENDING JUNE 30.

Gross earnings	$12,937,202.01	$25,882,8...
Less operating expenses	901,443.05	
Less taxes and insurance		13,838,6...
		$12,044,2...
Net earnings	$4,843,796.95	
Less added to reserve for sinking fund and depreciation	287,298.54	
Less added to provision for bad and doubtful accounts	250,000.00	
Less added to insurance reserve fund		5,381,0...
		$6,663,1...
Available for surplus and dividends		1,620,0...
Dividends paid		
		$5,043,1...
Carried to surplus		2,456,8...
Surplus June 30th, 1912		
		$7,500,0...
Surplus June 30th, 1913		

Assets.

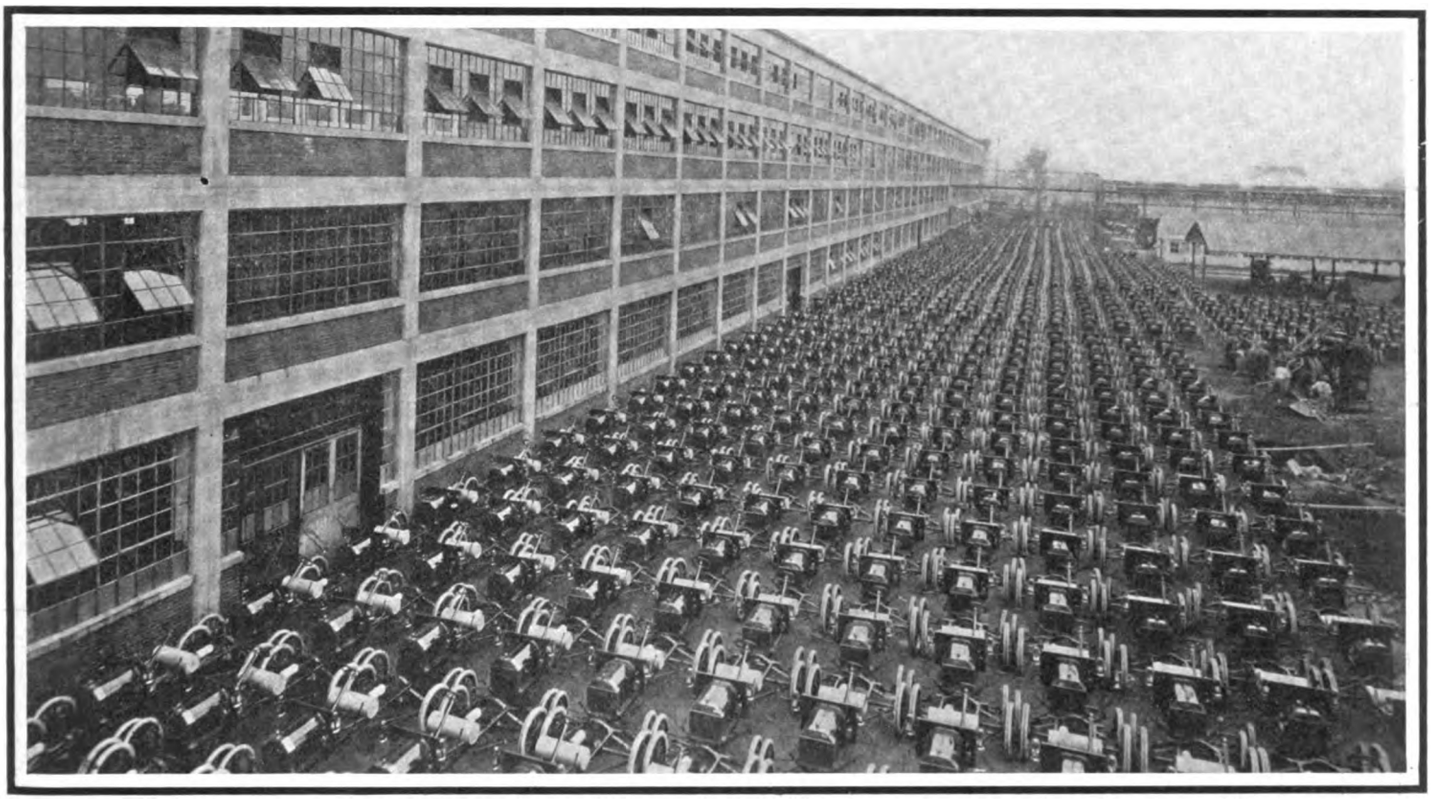
Plant account—Investments in real estate, leases, rights of way, pipe lines, tankage, refineries, ships, cars, terminals, distributing stations, natural gas wells and equipment	$28,895,4...
Bonds and mortgages	3,026,0...
Other investments	1,445,2...
Storehouse supplies	669,4...
Stocks of oil (crude and refined and in process of manufacture)	16,703,3...
Unexpired insurance	140,4...
Accounts and bills receivable	14,395,6...
Cash on hand	2,233,3...
Total	$67,517,9...

Liabilities.

Capital stock issued	$27,000,0...
Six per cent. convertible debentures issued	14,000,0...
Six per cent. serial notes outstanding	2,400,0...
Accounts and bills payable	6,531,2...
Provision for taxes	143,5...
Provision for interest on debentures	360,0...
Provision for interest on serial notes	72,0...
Provision for bad and doubtful accounts receivable	500,0...
Insurance reserve fund	8,761,1...
Reserve for sinking fund and depreciation	7,500,0...
Surplus	
Total	$67,517,9...

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The Week's Incorporations



IN THE LEE OF THE FORD PLANT IN DETROIT; 1,000 CARS—A SINGLE DAY'S OUTPUT—READY FOR SHIPMENT TO THE FOUR QUARTERS OF THE GLOBE; THE CARS ARE COMPLETE EXCEPT FOR BODIES

Albia, Ind.—Citizens' Automobile Co., under Indiana laws; authorized capital, $25,000.

Grand Rapids, Mich.—Reed Blickley Auto Dealers, under Michigan laws; authorized capital, $10,000; to deal in motor cars.

Jefferson City, Mo.—Automatic Tire Rest Co., under Missouri laws; authorized capital, $200,000. Corporators—Peter Lattner and others.

Wilmington, Del.—American Cyclecar Co., under Delaware laws; authorized capital, $50,000. Corporators—M. E. Dorsey, E. J. May, F. Giles.

San Marcos, Tex.—Bradley-Moore Auto Co., under Texas laws; authorized capital, $6,000. Corporators—J. M. Moore, W. Frank Bradley, I. W. Wood.

Philadelphia, Pa.—United Traction Improvement Co., under Delaware laws; authorized capital, $100,000; to manufacture, sell and deal in motor cars.

Jefferson, Wis.—Jefferson Auto Co., under Wisconsin laws; authorized capital, $6,000. Corporators—Henry W. Ruel, Jacob N. Heid, Clarence J. Puerner.

Fort Worth, Tex.—Chandler Motor Car Co. of Fort Worth, under Texas laws; authorized capital, $5,000. Corporators—B. K. Smith, M. H. Smith, R. E. Souther.

Detroit, Mich.—Internal Gear Drive Co., under Michigan laws; authorized capital, $6,000; to manufacture motor vehicles. Corporators—A. F. Mais, Ben Marks.

Portland, Ore.—Montavilla Garage, under Oregon laws; authorized capital, $2,500; to operate a garage. Corporators—C. H. Lacey, Theodore Roy, C. M. Hurlburt.

Sharpsburg, Pa.—Atlas Welding & Supply Co., under Delaware laws; authorized capital, $25,000. Corporators—J. Gehring and F. C. Rugy, of Pittsburgh; J. B. Anderson.

Selma, N. C.—Selma Motor Car Co., under North Carolina laws; authorized capital, $25,000; to deal in automobiles and operate a garage. Corporators—W. G. Ward and others.

Detroit, Mich.—Blumenthal-Prager Tire & Rubber Co., under Michigan laws; authorized capital, $1,000; to manufacture rubber goods. Corporators—Louis Prager, David Blumenthal.

New York, N. Y.—Velvet Co., under New York laws; authorized capital, $5,000. Corporators, Walter D. Ramsburgh, Harry C. Proctor, Arthur H. Miller, all of 290 Broadway, New York City.

Cleveland, Ohio—The Falcon Co., under Ohio laws; authorized capital, $15,000; to deal in motor cars. Corporators—James H. Cassidy, D. C. Heck, Mary A. Copeland, C. Verbsky, W. S. Mitchell.

St. Louis, Mo.—Palmer-Meyer Motor Car Co., under Missouri laws; authorized capital, $100,000; to deal in cars and accessories. Corporators—Charles W. Palmer, Frederick C. Meyer, Ferdinand A. Meier.

Dover, Del.—Havana Motor Omnibus Co. of Brooklyn, N. Y., under Delaware laws; authorized capital, $1,500,000; to manufacture, sell and deal in motor cars, motor omnibuses and other kinds of cars. Cor-

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porators—Ralph S. Hull, Brooklyn, N. Y.; Alexander S. Andrews, Flushing, L. I.; Ralph A. Gamble, Larchmont, N. Y.

Los Angeles, Cal.—The Motor Cars Distributors Co., under California laws; authorized capital, $75,000; to deal in automobiles. Corporators—F. W. Beau de Zart, A. C. Labrie, C. W. Fish, J. T. Bunn, M. W. Beau de Zart.

Milwaukee, Wis.—Milwaukee Grinding Wheel Co., under Wisconsin laws; authorized capital, $65,000; to manufacture disk grinders, emery wheels, abrasives, etc., for garage, farm and machine shops. Corporators—R. M. Paul, O. W. Bow, C. W. Buchen.

Cold Spring, N. Y.—Herbert F. L. Funks Co., under New York laws; authorized capital, $10,000; to deal in automobile supplies. Corporators—Henry M. Brigham, 27 William street, New York City; Aaron Michelson and Herbert F. L. Funks, both of 116 Broad street, New York City.

Minor Business Troubles.

A petition in bankruptcy has been filed against the New Taxicab Co., of Birmingham, Ala. The petitioners are the Highland Garage, the Standard Oil Co. and the William Wise Co.

Irving J. Gorton, a dealer in oil at White Plains, N. Y., has filed a petition in bankruptcy; his liabilities are $2,206 and his assets $628, consisting of accounts and several shares of stock, as follows: Oxford Linen Mills, 20; Estabrook Co., 20; United Motors Co., 10. The Standard Oil Co. is a creditor for $2,026.

Following the discovery of a shortage of $200,000 in the accounts of the Roseville Trust Co., of Newark, N. J., and the disappearance of Raymond E. Smith, the secretary and treasurer, the sheriff has seized the garage of the Oakland Motor Sales Co. and the automobile supply shop of L. C. Smith in East Orange, N. J. Smith is said to have been the whole or part owner of these businesses. The vice-president of the bank declares that Smith owes the institution $305,000 and is a fugitive.

As a solution of the financial troubles of the Donaldsonville (La.) Garage and Automobile Supply Co., a committee which was appointed to liquidate the company's assets has accepted an offer of K. A. Aucoin, organizer and manager of the company, whereby he will assume all assets and liabilities and settle with the stockholders on a 12½ per cent. basis. The company was incorporated in October, 1911, with a capital stock of $10,000, and owns a completely equipped garage and repair-shop but never paid any dividends. Aucoin will continue the business.

PROMINENT MEN IN TRADE WHO ASSUME NEW DUTIES

Resignations and Promotions That Serve to Place Many Workers in New Places—Few Leave the Industry.

H. C. Grannis has been appointed manager of the Cadillac branch in Indianapolis; formerly he was chief tester for the National Motor Vehicle Co.

Charles K. Thomas has been appointed manager of the Federal Truck Co.'s New York branch. Previously he represented the Chase truck in the West.

J. S. O'Rourke has been made purchasing agent of the Cartercar Co., of Pontiac, Mich. Formerly he held a similar position with the Jackson-Church-Wilcox Co., of Saginaw, Mich.

L. R. Acton has been appointed manager of the Tiffany Electric Car Co., of Pontiac, Mich. The Tiffany company was recently incorporated for the manufacture of two electric models.

S. Christensen has been appointed field sales manager and advertising adviser for the Vanguard Mfg. Co., of Detroit, Mich. Previously he was connected with the Emil Grossman Co., of New York City.

L. E. Rood, formerly field sales manager for the Thomas B. Jeffery Co., of Kenosha, Wis., has been appointed manager of the Rambler branch in Chicago; he succeeds Z. C. Elkin, who resigned to enter business for himself.

W. H. Edenbeck, formerly special representative of the United States Tire Co., has been appointed manager of that company's branch in Worcester, Mass. He succeeds L. E. Hevaner, who resigned to open an agency for cars.

W. W. Austin has been appointed superintendent of the new Studebaker plant in Pontiac, Mich., known as Plant 15; it formerly was the plant of the Vulcan Gear Works and is now used for the manufacture of replacement parts.

R. W. Lytle, formerly with the Velie Motor Vehicle Co., Moline, Ill., and later factory manager of the Lycoming Foundry & Machine Co., Williamsport, Pa., has been appointed factory manager of the Hazard Motor Mfg. Co., of Rochester, N. Y.

E. A. Williams, who has been manager of the Castle Lamp Co., in Battle Creek, Mich., has been made assistant manager of the Gramm Motor Truck Co., of Lima, Ohio. His transfer followed the removal of the lamp works to the Willys properties in Toledo.

H. H. Leckler, formerly a member of the engineering staff of the International Harvester Co., has been appointed mechanical engineer of the Emil Grossman Co., of New York City. He has served also in the engineering departments of the Winton and F. B. Stearns companies.

W. McK. White has resigned as advertising manager of the Marion Motor Car Co., of Indianapolis; while he has not divulged his future plans, it is understood that he will not leave Indianapolis. His past connections include the Premier and United States Motor companies.

C. A. Forster, who was appointed commercial manager of the Maxwell Motor Co., of Detroit, in February last, has resigned; prior to his Maxwell connection he was assistant general manager of the Burroughs Adding Machine Co., and it is understood he will return to that organization.

Charles LaPorte, formerly with the United States Motor Co., and who also had experience with the Brush, Reo and Thomas companies, has been appointed chief engineer of the Aristos Co., of New York City. He will have charge of the design and production of Mondex shock absorbers and other Mondex devices.

W. S. Jewell has been made vice-president and sales manager of the American-Marion Sales Co. of New York, the metropolitan distributer of those cars; Jewell has been identified with the trade 12 years, originally as a promoter of a taxicab business in New York, and later as manager of the Franklin Automobile Co.'s New York branch, general manager of the Motors Engineering Co. metropolitan distributors of Kelly trucks, and as distributer in the same territory for the R. C. H. Corporation.

Wayne Wants Garageman to Settle.

Because Olaf P. Hansen, who trades in Chester, N. Y., as the Chester Auto Garage, failed to pay for the apparatus he bought March 15, 1913, from the Wayne Oil Tank & Pump Co., of Fort Wayne, Ind., the latter filed suit against him this week in the Supreme Court for New York county; the amount asked is $100.

Changes in Capitalization.

Detroit, Mich.—Hudson Motor Car Co., from $1,000,000 to $2,500,000.

Birmingham, Ala.—Blacklock Tire & Rubber Co., from $3,000 to $5,000.

Bridgeport, Conn.—Blue Ribbon Auto Garage & Carriage Co., from $100,000 to $6,000.

Recent Losses by Fire.

Sault Ste. Marie, Mich.—Lock City Auto Co., garage damaged. Loss, $10,000.

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In the RETAIL WORLD

J. B. Sparks will open a repair-shop in usanville, Cal.

John Johnson plans to build a new garage n Dewey, Okla.

Harry Bellamy has opened a garage in Manchester, Conn.

Kanive & Brickner have opened a new garage in Lacon, Ill.

Smith & Belville have erected a new garage in Tehamah, Neb.

Charles Vaninetti, of Lee, Mass., has secured permission to erect a garage.

The Auto Sales & Repair Co., of Everett, Wash., has opened a new repair-shop.

R. L. Nash, of Palmetto, Fla., is building a garage; it will stand on Myrtle street.

Adolph Baatz will erect a garage in Miami, Ariz. It will stand on Broad street.

N. P. Nelson, proprietor of the Breit Motor Co., of Mason City, Ia., is building a garage.

C. M. Akes, of Leon, Iowa, has commenced the construction of a garage, 60 x 90 feet.

Trowbridge Bros., of Fort Smith, Ark., are building a garage; they also operate a laundry.

William Carlisle, of Atchison, Kan., is about to erect a new garage; the site is on 3rd street.

The Kruse Motor Car Co., of Cincinnati, Ohio, is erecting a new building; the site is on 8th street.

J. T. Higgins and A. C. Starrett are building a garage in Morgan Hill, Cal. The site is on Monterey street.

J. W. Waynick, of Roanoke, Va., has established an agency in Bluefield, W. Va. He is a Cadillac dealer.

The John Finn Co., of Cincinnati, Ohio, plans to build a repair-shop on Charleston avenue; it will cost $15,000.

Ray Alberts has purchased a half-interest in the garage of H. J. Hornung, in Eureka, Cal. It is located on 5th street.

L. J. Schwab is about to open a garage and salesroom in Yoakum, Tex. The location is at Irvin and Hugo streets.

William Hoffmaster has launched a taxicab service in Battle Creek, Mich. His initial equipment is three Ford cabs.

The Fred M. Smith Co., of Hibbing, Mich., has changed its name to Advance Auto Co. G. N. Buchart is president.

C. D. McNeil and Dr. M. B. Huff, of Corona, Cal., will enter the garage business; they will erect a building on 6th street.

E. Kullengen, of Chicago, has secured permission to build a one-story garage; it will be located at 2739 West North avenue.

V. H. Van Sickle, of Des Moines, Ia., has entered the list of dealers; he has secured the Read agency and will operate a garage also.

James Taylor, of Philadelphia, Pa., has secured plans for a new garage to be erected at 62d and Osage streets; the cost will be $10,000.

A new two-story garage will be erected for A. Wilmarth in Brooklyn, N. Y., at 360 Cumberland street; the estimated cost is $14,000.

The D. C. Tiffany Co., of Boston, which has operated an exclusively electric garage, has become a dealer; it has taken the Ohio electric agency.

A. E. Dickey has entered the trade as a dealer in Hollywood, Cal. He handles Overland and Kissel cars, Baker electrics and Federal trucks.

Maxwell & Chamberlain, of Denver, have secured permission to erect a garage and salesrooms at 1711 Sherman street; the cost will be $17,000.

The Republic Rubber Co. of California has opened a branch in Fresno under the management of A. H. Simon; it is located at 1931 Mercer street.

Earl D. Loomis is about to establish an automobile livery business in Jackson, Mich. Until recently he was engaged in the undertaking business.

The Oakland Motor Co. branch in Boston has been installed in new salesrooms at Newbury street and Massachusetts avenue; Fred Walsh is manager.

Curtis Dawson has purchased the interest of his partner, Reynolds Dale, in the Tiskilwa (Ill.) Auto Co. Dawson will continue the business alone.

David E. Reed and Charles Blickley, of Kalamazoo, Mich., have formed a partnership to operate a garage; they also will handle cars and accessories.

The M. S. Buckley Co., of Los Angeles, is about to convert a concert hall on 17th street into a garage; the company is Pacific Coast distributer of Autocars.

James McClure and his brother, Robert T. McClure, have formed a partnership in Columbus, Ohio; they will open a garage and salesrooms at 183 East Gay street.

Plans have been prepared for a garage to be erected in Los Angeles on Rampart street, for F. O. Engstrom; the specifications call for an expenditure of $16,000.

The Carolina Cadillac Co., of Winston-Salem, N. C., has opened a new two-story garage and salesrooms at Main and 2nd streets; the building contains 10,000 feet of floor space.

The Hudson Automobile Co. is a new entrant to the trade in Washington, D. C. It has located at 1136 Connecticut avenue and stocks Hudson cars. Howard G. Kneessi is manager.

Authority has been granted to C. Shongood, of 439 Broadway, New York City, to erect a three-story garage on 1st avenue, between East 42d street and 43d streets; it will cost $30,000.

The Cincinnati (Ohio) Automobile Co. is having a new building erected on Court street; it will open up September 1 on an enlarged scale. The company handles supplies and accessories.

The Hoppe-Hatter Motor Co., of Milwaukee, Wis., will open a new service station in September at Martin street and Broadway; the company handles Chalmers cars and Rauch & Lang electrics.

The Transcontinental Garage, of Cedar Rapids, Ia., which has been reorganized, has leased the Faulkes Garage on North 3rd street, a two-story building, 90 x 150 feet; the company handles Moline cars.

J. Hamacheck & Sons, of Two Rivers, Wis., have opened a garage and repair-shop on Washington avenue; Julius Hamacheck, Jr., until recently connected with the Mitchell-Lewis Motor Co., of Racine, Wis., is manager.

Charles J. Clapp, formerly employed in Toledo, Ohio, by H. E. Thorne, has entered the trade for himself; he has secured the Winton distributing agency for northwestern Ohio and is located temporarily with Thorne.

J. Armistead Eggborn has been appoint-

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ed trustee in bankruptcy for the B. F. Board Motor Truck Co., of Washington, D. C. The testimony of the company's officers will be taken September 9 by the commissioner in bankruptcy.

Harry L. Hornberger, former manager of the Oakland branch in San Francisco, has formed the Henry L. Hornberger Co., with headquarters in the same city; he has secured the agency for the Palmer & Singer for California, Oregon, Washington and Idaho.

Frank Reed, of Chicago, has purchased the American House garage, in Kalamazoo, Mich., from C. T. Goodrich; he will operate a taxicab service. Reed conducts a taxicab business in Chicago and has purchased six Ford and four Thomas cabs for his new business.

The Nebraska Automobile Specialty Co. has been incorporated in Omaha, Neb., and is temporarily located at 219 North 11th avenue; it will move later to "Automobile Row" and act as distributer of the Gray pneumatic gearshift and engine starting apparatus.

J. C. Kendall, formerly of Pittsfield, Ill., has opened a new garage in Hillsboro, in the same State, at Broad, Wood and Berry streets; the site, building and equipment cost $14,000. Besides operating a garage and machine-shop, Kendall will maintain an automobile livery.

The Miller Bros. Automobile & Supply Co., of Washington, D. C., has leased a building at 1st street and Pierce place northeast and will open a service station; the company handles Fords. The building covers an acre of ground and is now used as a Studebaker service station.

William Fraser, of Polo, Ill., has purchased the interest of J. J. White in the Schlig Garage in Rockford, on Elm street; following this transfer of interests Fraser was elected president, J. B. Knight secretary and treasurer and John Schlig vice-president and general manager.

The Chanslor & Lyon Co., of Los Angeles, has opened a branch in Oakland, Cal., in a new building at 2537 Broadway; Geo. A. Morrill is manager. The company, which is an accessory and supply dealer, now has stores in Los Angeles, San Francisco, Fresno, Seattle, Portland, Spokane and Oakland.

The Cincinnati Automobile Clearing House has been formed in that Ohio city with a capitalization of $5,000 to handle new and used cars and operate a repair-shop; the incorporators are Charles F. Hornberger, Robert Orihco, Arthur R. Spangenberg, Samuel Bromley and G. R. Chadwick. Uricho will be president, Spangenburg secretary and Hornberger treasurer.

POPE TO CONCENTRATE ON "SIX"; NEGOTIATES LOAN

Hartford Manufacturer to Build One Type Only—Loan to Afford Ready Capital — Investigation Explodes Derogatory Rumors.

Although numerous and persistent rumors regarding the financial standing of the Pope Mfg. Co., of Hartford, Conn., have been more or less prevalent and have emanated from various and mostly dubious sources in the trade, an investigation from truly authentic sources of information reveals the fact that the Pope-Hartford company is enjoying a standing better than it has in several years. The light in which the company is truly regarded by men familiar with conditions within and without the corporation is probably best made plain in the statement of a manufacturer who, on Thursday, made plain to a Motor World man that he would "sell the Pope company all they may want."

While the statement of the company for the fiscal year ending July 31, 1911, showed that the tremendous expense of building up the business had not permitted as large profits as had been hoped would accrue, the statement for the fiscal year which followed, terminating July 31, 1912, exhibited a marked recovery of tone and indicated that the company then was in a much better condition. This condition has continued and the company's status has improved monthly.

The company has made no secret, however, of the fact that it is negotiating for a loan that it may have available more ready capital to replace temporarily the vast sum which has been used in building up the industry; Col. George Pope, himself, stated to Motor World that the company is about to secure $2,000,000 through a ten-year mortgage loan on the company's property, but that the move is not attended with any financial unsoundness within the corporation.

While his statement is backed up by men familiar with but outside the corporation, the recent persistency of the disparaging rumors doubtless has been accentuated by the fact that alterations are being made in the Pope line of cars; although it only last year added a four-cylinder model, listing at $2,250, thus virtually marking the entry of the company into the medium-price field, it now announces that this model is to be discontinued and that hereafter production activities will be centered on the building of "sixes"; in the meantime, however, attention will be devoted to the disposal of the few remaining model 31 "fours," and as an inducement to hurry their removal from the floors of the half dozen or so dealers who will receive them as fast as they can be made up from parts on hand, a substantial cut in their price has been made; instead of $2,250, they will be sold, completely equipped, for $1,650. Further than that no more four-cylinder pleasure cars will be built, no information regarding either construction or prices of the new "sixes" was disclosed.

Agner Takes on an Electric Horn.

The Raymond C. Agner Co., of Burlington, Wis., will add several new accessories to its line of grease guns, wrenches, plugs etc. The new articles are a grease gun and an electric signal horn. At the annual meeting, Hugh Agner was re-elected president; Edward Brook, vice-president; Dr. C. H. Meyst, secretary; and George Weiler, treasurer. Agner continues as general manager.

Garageman Burned in Garage Fire.

William Dennison, one of the proprietors of the Lock City Auto Co., of Sault Ste. Marie, Mich., was severly burned last week when the company's garage caught fire; his injuries rendered his condition critical, but he will recover. The fire started from a tank of gasolene and did $10,000 damage.

Studebaker Gets Drawback on Gear Cases.

The Treasury Department last week allowed the Studebaker Corporation, of Detroit, Mich., a drawback on gear casings when exported as part of the rear axle and gearset of Studebaker model "25" cars. The cases are made from imported aluminum by the General Aluminum & Brass Castings Co., of Detroit.

Braender Tire Asks Unpaid Account.

The Braender Rubber & Tire Co., of Rutherford, N. J., filed suit this week in the Supreme Court for New York county against G. O. Reynolds, Inc., of New Rochelle, N. Y. The complainant asks $140.40 for goods sold between February 10 and March 23, 1913.

Deserts Milwaukee for "Windy City."

The El Starr Mfg. Co., which produces automobile supplies and at present is located in Milwaukee, Wis., has leased the sixth floor of the Wilson Building, 223-229 Erie street, in Chicago, Ill.; the entire business will be removed to the new location.

Indian Pursues Oneida County Man.

The Indiana Refining Co. this week commenced suit in the Supreme Court for New York county against L. E. Worden, of Whitestown, N. Y., for $48.37; the amount is the balance of a bill for goods sold between July 23 and November 22, 1912.

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MOTOR WORLD

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The Motor World Publishing Company
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A. B. SWETLAND, President and General Manager
F. V. CLARK, Business Manager.

EDITORIAL DEPARTMENT
R. G. BETTS, Managing Editor
S. P. McMINN HOWARD GREENE
R. W. SHERMAN

ADVERTISING DEPARTMENT
BROCK MATHEWSON, Manager
New York Office
1600 Broadway
IOWARD L. SPOHN LOUIS R. SMITH O. H. ADAMS

Western Office
1001 Ford Bldg., Detroit, Mich.
W. H. TRIPP, Mgr.

Detroit
1001 Ford Bldg.
AXTON R. DAVIES

Cleveland
610 Superior Ave. East
C. H. HANDERSON

Chicago
Room 510 Harvester Building
606 South Michigan Avenue
H. A. WILLIAMS

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SOLVING THE FENDER PROBLEM.

When, during the last automobile show season, the products of factories all over the country were lined up and critical comparisons could be made, it became apparent at once, even to those who were not much given to critical survey, that greater attention had been paid to fender design during the year gone by than had been the case in any previous year. It became apparent that fenders had been made to fit more properly, that their lines had been smoothed out, so to speak, and that due regard for glossy paintwork was in a fair way to being acknowledged.

And now that the newer crop of cars is coming through the factories it is just as plainly apparent that the promise of something still better is being fulfilled. Among the new cars that already have been made public, a sufficient number to warrant attention being called to the fact, are fitted with domed fenders of a type that may be expected to afford maximum protection to paintwork and to passengers.

These domed fenders are not new, of course; they have been known abroad for a number of years, and a few—a very few—American cars have been fitted with them in years gone by. But this is the first time that there has been evidenced any general tendency on the part of manufacturers of low and medium-priced cars to adopt them, despite their beauty of outline and their greater utility as compared with the straight fenders with which every one is familiar.

Their shape permits them to be so placed that they hug the tires more closely than do straight fenders, and for this reason they not only enhance the appearance of the car to which they are fitted by eliminating the gaping holes between fender and wheel, but they materially reduce the possibility of mud splashing, which is far more important. On either score, their adoption is a laudable attempt to make better something that never has been surpassingly good.

TWO-SPEED AXLES AND "GAS" CONSUMPTION.

Whether or not the rocketing price of gasolene has influenced the designers on both sides of the Atlantic who have evolved two-speed axles—that is, bevel gear drive systems providing two direct drives, each through its own individual pair of bevels—it is difficult to say; not unlikely it has done so. It is a fact, however, that the two-speed axle is conducive to gasolene economy, in theory at least, though just how far practice and theory agree in this instance only time can tell.

The reason why the two-speed axle should be conducive to gasolene economy is not difficult to understand; it greatly increases the range of gear ratios and makes it possible to run the motor at the most economical speed for the existing conditions. To illustrate the principle involved: Suppose a car to be ascending a grade at a speed the motor is capable of maintaining at 600 revolutions per minute, but that the nearest to the proper gear ratio forced the motor to run at 800 revolutions per minute. It is clear that the motor would be burning "gas" to no purpose, and at the same time wasting power and causing wear and tear by internal friction. With a proper gear ratio, however, the motor would give maximum power for the fuel consumed. A point to note in this connection is that where it is necessary to run on a low gear and yet throttle the engine to prevent racing, the partial closing of the gas intake causes partial vacuum in the cylinders. It requires energy to produce the partial vacuum, and gasolene to produce the energy.

VALUE OF PROPER SHOP EQUIPMENT.

Good men count for much in the repair-shop. Without them neither good work nor profits can be looked for. But no amount of skill or conscientiousness on the part of the men can compensate for time lost in doing by hand things that can be done much quicker and much better by mechanical aids. The repair man who is obsessed with the idea that he can wriggle along somehow without modern appliances, competing with shops that are modernly equipped, stands an excellent chance of being left behind in the rush for business and financially falling by the wayside. He is far less likely to get business than the more enlightened proprietor.

Portable cranes, which are treated elsewhere in this issue of Motor World, are important time-saving devices; but they are by no means the only devices that are available for use by those who are sufficiently far-sighted to perceive their real value in holding customers and, in the long run, increasing profits.

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POWER TIRE INFLATORS ADDED BY STEWART-WARNER

Cylinders Are Block-Cast and Have Ring-Packed Pistons—Two- and Four-Cylinder Models, Air and Water-Cooled.

Soft and yielding as the atmosphere is on some occasions—in the spring, for instance—there are times when it becomes exceedingly hard and stubborn, and needs no little forcing to get it to go where it is most needed—into a tire, for instance. And it is just because the air so obtsinately resists compression that a pump intended to handle it rapidly and in considerable quantities has to be a decidedly substantial bit of mechanism. To go a step further, that is the reason why the Stewart-Warner Speedometer Corporation, of Chicago, has taken the pains it has to make a little bit of a four-cylinder air-pump extremely strong and sturdy—in fact, it is built for all the world like a little gasolene motor.

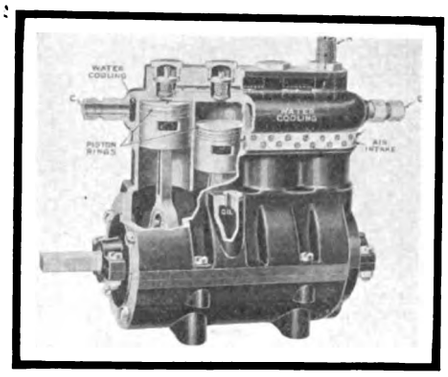
The four cylinders, which have a bore of 1 7/16 inches and a stroke of 1⅛ inches, are cast in a single block, of gray iron, and the upper half of the crankcase is integral with the cylinders. The pistons are die-cast, fit the cylinders accurately and are provided with two ground and lapped rings each, so that not only is the compression good, but the lubricating oil in the base cannot work into the compression space. The compression space is thoroughly cooled by a water jacket or by cooling flanges, the jacketed type being best for hard and continuous work and the air-cooled machine best for intermittent work, such as the occasional inflating of tires.

The shaft is a plain, straight piece of ¾-inch steel and on it are mounted four eccentrics, by which the pistons are reciprocated through substantial hardened steel connecting rods. The shaft runs in two long bearings, each of which is provided with an oil pocket with its opening inside the crankcase so that it receives splashed oil in liberal quantities. On the bottom of the crankcase are lugs for bolts by which the machine may be screwed to a base or to the running-board of a car. A drain cock affords means for occasionally removing old oil and a combined vent and filler opening permits refilling.

As befits a machine that is intended to run for a long time without special attention, the valve system has been made exceedingly simple and what few parts are used are not liable to derangement from any ordinary cause. No valves, in the ordinary sense of the word, are used for the intake; in-tead, there are ports in the cylinder walls which are uncovered by the pistons, just as are the ports of a two-cycle motor. The intake air openings are screened to prevent the ingress of dirt. The delivery valves are located in the cylinder heads—one to each cylinder—and are of the poppet type.

While every precaution is taken to prevent oil from working up past the pistons in excessive quantities, it is difficult to avoid a slight amount, and to take care of this there is a separator in the delivery line. This is an effective little device that thoroughly purifies the air before it enters the tires. A drain cock on the separator provides a way of getting rid of oil that may accumulate after long running.

In addition to the four-cylinder pump described, the Stewart-Warner people are building a two-cylinder pump which, however, differs from the "four" only in the number of cylinders and, of course, the consequent reduction of capacity. The four-cylinder pump is a compact affair, measuring 8 inches in length, 7½ inches in height and 4 inches in width. When the pump is to be operated by hand a suitable crank is furnished for the purpose. With each pump there is supplied a 10-foot length of air hose with the requisite connections.



STEWART-WARNER PUMP

Lincoln Highway Now "Lincoln Way."

Although it always has been referred to as the Lincoln Highway, President Henry B. Joy of the Lincoln Highway Association has rechristened that much-mooted transcontinental road; he has styled it instead "The Lincoln Way," and as he has gone to the trouble of copyrighting the new name, it is likely that in time it will be formally adopted and will replace the old.

To Attack Ohio's State License Law.

Following the example of motorists in some other States, the Ohio State Automobile Association has decided to attack the new automobile State license law which practically doubles the tax, which ranges from $5 to $18; the attack will be upon the grounds of the constutionality of the tax and upon the charge of exorbitancy.



*Indicates Sanction by A. A. A.

Aug. 25-28, Houston, Tex.—Houston Automobile Club's reliability tour.

August 29-30, Chicago, Ill.—Elgin Road Race Association's road races, under auspices of Chicago Automobile Club.*

August 30-September 6, Chicago, Ill.—Reliability tour of the Chicago Motor Club

Sept. 1, Columbus, Ohio—Columbus Automobile Club's track racemeet.

September 1-2, Sioux City, Ia.—Sioux City Automobile Club and Speedway Association's track racemeet.*

September 6, Hamline, Minn.—Minnesota State Fair Association's track racemeet.

September 8-13, Chicago, Ill.—Chicago Motor Club's Around Lake Michigan reliability tour.*

Sept. 9, Corona, Cal.—Speedway track races, under auspices of Corona Automobile Association.

September 12, Canfield, Ohio—Canfield Fair Association's track racemeet.

Sept. 13, Covington, Ky.—Cincinnati Automobile Club's track racemeet.*

Sept. 13, Grand Rapids, Mich.—Grand Rapids Automobile Club's track racemeet.

September 14, Seattle, Wash.—Kings County Fair Association's track racemeet.

Sept. 20-21, Detroit, Mich.—Track racemeet under auspices of Michigan State Fair.

Oct. 10-17, Paris, France—Annual automobile salon.

November 2-3, Los Angeles, Cal.—Los Angeles to San Diego to Phoenix road race.

November 4-5, El Paso, Tex.—El Paso Automobile Club's road race between El Paso and Phoenix, Ariz.

Nov. 6, Phoenix, Ariz.—Track racemeet under auspices of State Fair Association.

November 24, Savannah, Ga.—Vanderbilt Cup road race under auspices of the Savannah Automobile Club.*

November 27, Savannah, Ga.—Grand Prize road race under the auspices of the Savannah Automobile Club.*

January 3-10, New York City—Automobile Chamber of Commerce's national automobile show in Grand Central Palace.

January 24-31, Chicago, Ill.—Automobile Chamber of Commerce's national automobile show in the Coliseum and First Regiment Armory.

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MAKE READY TO DEDICATE POPE MEMORIAL FOUNTAIN

Monument Already in Place at Entrance to Pope Park in Hartford—To Commemorate Deceased Manufacturer's Activities.

Although the date of the dedication and the details of the attendant ceremonies have not yet been decided, the Pope Memorial Fountain at length has become a whole reality, and it now stands, as originally was intended, at the entrance to Pope Park, on Capitol avenue, in Hartford, Conn., opposite Terrace Park.. Except that the ground around the monument requires a little manicuring, the fountain is complete and is a fitting tribute to the untiring efforts of Col. A. A. Pope in promoting good roads, and to his business acumen which probably first was felt as long ago as 1878, when the American bicycle industry commenced to rear its head and then to assume such gigantic proportions.

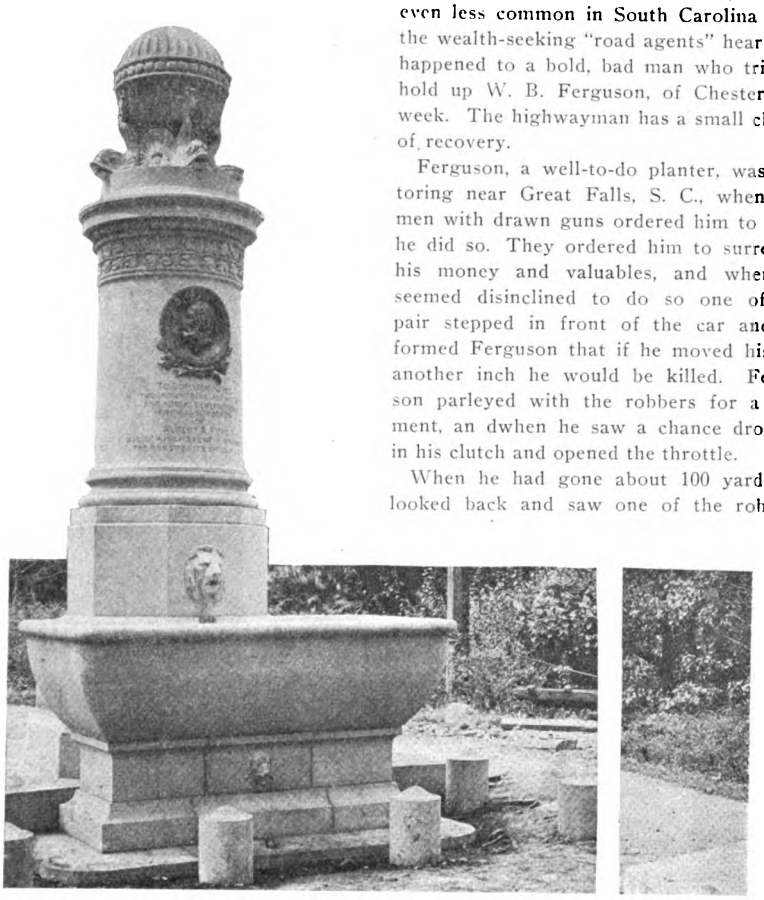
Although best known for his interest in that industry, Col. Pope's interest in the manufacture of motor vehicles dates back to 1897, when a motor carriage department of the Pope company was formed to produce an electric vehicle. Later, the Pope-Hartford gasolene car and the Pope-Tribune both were directly developed by the Pope company, though Pope-Tribune long has ceased to exist.

Credit for the original idea of erecting the fountain as a memorial to Col. Pope belongs to the Bicycling World and Motorcycle Review, which shortly after his death on August 10, 1910, suggested the monument and headed a fund for its erection with a donation of $100. The fund grew rapidly and, though most of it was subscribed by Col. Pope's business associates other than those directly connected with the automobile industry, that those in that industry took an active interest in the project is revealed by the fact that a substantial part of the total amount donated came from automobile dealers and manufacturers, among which are the Pope Mfg. Co., the Pierce-Arrow Co., the Hartford Rubber Works, the Columbia Motor Car Co., and others.

As may be seen by the accompanying illustration, the fountain is an imposing work of art. The stone portion of it is red Westerley granite and the base is arranged with drinking facilities on one side for thirsty horses and dogs and on the other side for pedestrians. Water to fill the great horse trough, which is hollowed out of a single block of stone, falls from the gaping jaws of an antique lion's head carved out of the granite, while water for the low dog trough appropriately flows from a stone dog's head near the base. On the opposite side is a sanitary "bubbler" at which "humans" may slake their thirst. A cleverly carved fish is placed over the "bubbler" bowl, but its only use is that of an ornament. Above the lion's head, on the granite pillar, there is a striking bronze portrait of Col. Pope. The pillar has a molded cap and is surrounded by a large granite ball supported by dolphins. The ball, which is about 2 feet 6 inches in diameter, has a band encircling it filled with smaller balls, suggestive of the ball bearings which formed the foundation of Col. Pope's early success in the bicycle industry. The inscription beneath the bronze portrait is as follows:

To Commemorate
The Industrial Activities
and Public Benefactions
From 1880 to 1905
of
Albert A. Pope
All of Which Greatly Advanced
The Prosperity of Hartford.

It is expected that the dedication exercises will be held some time next month after vacations are over and those interested in the monument have returned to the city.



POPE MEMORIAL FOUNTAIN AS IT NOW STANDS IN HARTFORD

Runs Car Over Would-be Highwayman.

Robbing motorists at the point of a gun has not as yet proven a common pastime with highwaymen, and it probably will be even less common in South Carolina when the wealth-seeking "road agents" hear what happened to a bold, bad man who tried to hold up W. B. Ferguson, of Chester, last week. The highwayman has a small chance of recovery.

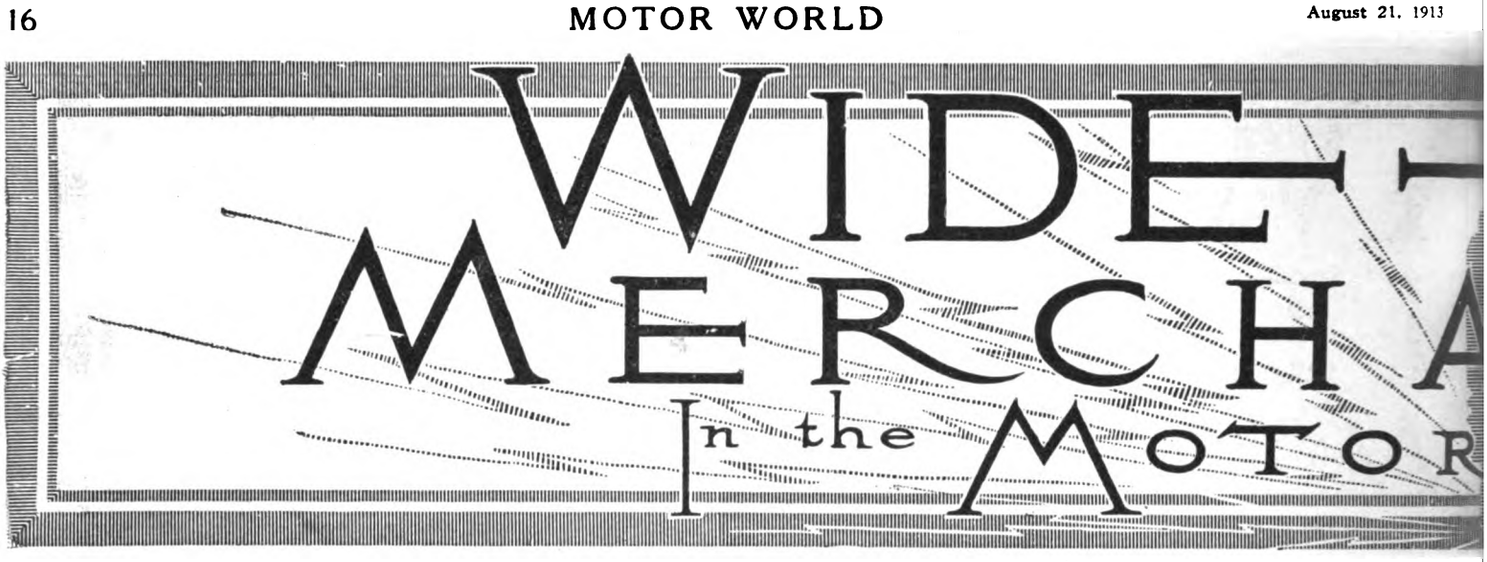
Ferguson, a well-to-do planter, was motoring near Great Falls, S. C., when two men with drawn guns ordered him to stop; he did so. They ordered him to surrender his money and valuables, and when he seemed disinclined to do so one of the pair stepped in front of the car and informed Ferguson that if he moved his car another inch he would be killed. Ferguson parleyed with the robbers for a moment, an dwhen he saw a chance dropped in his clutch and opened the throttle.

When he had gone about 100 yards he looked back and saw one of the robbers running away, while the other lay prostrate in the road. Ferguson summoned a physician, went back, picked up the injured man and carried him to a hospital.

Chalk Marks Aid in Law Enforcement.

In Los Angeles, where there is an ordinance forbidding the owner or driver of a car to leave the car at the curb for more than 15 consecutive minutes, the police have evolved a systematic method of keeping track of the cars and of enforcing the ordinance; when a car stops, a patrolman marks with chalk on the tire and on the curb adjacent the time the car was halted and if the car is still there after the allotted time has elapsed a court summons is attached to the steering wheel. If the owner does not respond to the summons the police look him up, having taken a record of the car and number.

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"HIGH BROW" SALESMANSHIP

Fine-sounding Methods of Efficiency "Experts" That Do Not Always Work Out in Practice—Must Understand Disease Before Trying to Cure It.

The efficiency "expert" is frequently heard from nowadays addressing salesmen in all lines of business. He tells them how to do things as seen from his idealistic point of view, and it looks awfully logical to the salesmen while they are "in convention assembled."

Some of the men wonder why they have been such dubs for a long time and how it is they have managed to get the business in spite of their ignorance. But some of them aren't jollied a bit. They view the talk-fest in the light of their own practical experience, and they know that conditions as they actually are require entirely different kind of treatment. They listen respectfully and arise with the rest when the "boss" asks, "Is everybody in favor of this?" and then they go out and sell goods their own way. And they sell them.

Must Believe in Goods to Succeed.

Sometimes even the sales manager knows that the stuff that is being handed out does not ring true, but he lets it get over just the same. Why is it that men of capacity will fool themselves in this way? These same men know that unless a salesman knows his goods and honestly and sincerely believes in them, he will never make a howling success. And yet they will try to sell the entire selling force of the company an idea which they do not sincerely and honestly believe in themselves. It cannot be done.

The only way to tell men how to do things in a better way is get out and face their conditions in the field as they actually exist and not as they exist in our imaginations. If you want to know the correct remedy you must thoroughly understand the disease. There is much more to be said on this subject, and it is well worth thinking over carefully.

CHARACTER AND ITS VALUE IN THE COMMERCIAL WORLD

Character is the modern basis of credit. Men will take a chance with the man who has character for the very reason that they know they are not taking such very big chances after all, when a man with the right sort of character at the helm.

That is why commercial agencies and credit concerns always try to get a line on the personal character of the individual concerned. It counts more than money. The testimony of the late J. P. Morgan during the investigation of the so-called Money Trust gave character first place.

Could anything be more encouraging to men who are striving to develop character? Character is the only thing that can never for very long be successfully counterfeited. Character is an expression of what is within. If you are "square," men will find it out. If you are "crooked," much talking about your squareness will avail nothing; men will find you out.

Sincerity, honesty, initiative, persistency, combined with clean living and right thinking must develop the right sort of character. The law is immutable.

DETAILS THAT MEAN MORE TO PROSPECT THAN CAR ITSELF

On one of the big D. & B. boats there is a beautifully designed Gothic smoking room. The effect is that of an ancient Gothic chapel with its aisles, pews and organ. At one end is a noble fireplace with a big, solid shelf like a bit from some old castle. The wood carving is fine in design and execution. The lighting is beautiful. It is a new idea on a fresh-water boat, and wins enthusiastic praise from those who love and appreciate such things. It was interesting to note the different features that appealed to different persons. To some it was the entire conception of the magnificent salon, but to the many it was some particular detail.

"Isn't this fireplace grand?" "My! These seats are comfortable!" "That's carved from solid oak." "Did you notice the candle effect of the lights?" "Say! That's a great imitation of a fire." Those were the expressions most commonly heard.

Few Grasp More Than Part of Details.

What has this to do with better merchandising? Simply this: It drove home to the listener the fact that in salesmanship, no matter how splendidly a proposition is presented, there are few who grasp more than some of the details.

You can go into the matter as deeply and thoroughly as you will, and when you get through you often find that it is the details that have lodged—and not the big idea. Thus it is that cars have been, are being and will be purchased on the strength of some more or less important detail like the color of the body, the style of the upholstery, the kind of clutch, the type of motor, the clever little conveniences for storing away caps and goggles, and so on.

Happy is the salesman who can read his customer with sufficiently keen analysis to discern the point of appeal and concentrate his attack accordingly.

When It Is Time to Leave Prospect.

When the other fellow is not interested and continues to sign letters and answer 'phone calls, beat it. Your story is too valuable to both of you to be lost between a telephone and a pen. A remark that you see he is busy (business of rising and reaching for hat) will sometimes cause him to sit up and take notice. But even then it is best to go—and come back some other time, preferably by appointment.

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"SELF-DEVELOPED" PROSPECTS

How Best to Get Trade of Man Who Is Not Known to Be in the Market Until He Buys—Reputation for Squareness as "Silent" Advertisement.

Every dealer and salesman who is candid with himself realizes that there are many prospects who really develop themselves into buyers. This is attested by the fact that time after time sales of cars are made to individuals who, up to the moment they declared themselves, had apparently neither the inclination nor the coin to purchase an automobile.

In many cases the salesman or dealer is able to recall that he met the self-developed prospect before; it may have been socially or it may have been in some business transaction, but whenever or wherever it was there was nothing to indicate that the individual concerned was a first-class automobile prospect.

Not Known as Prospect but Buys.

Suddenly this person comes in and buys a car from him or from some other dealer, and he realizes that he has been talking to a prospect all the time and knew it not.

If the sale is made by you there is no cause for worry; if not, it is certainly worth while to try and find out why the buyer was attracted elsewhere. In either case, the thought suggests itself that if there is one buyer of this type, there must be others, and therefore it would seem good business to give a share of attention to plans for the luring of this "self-developed" or "silent" prospect.

Inasmuch as one does not know who he is or where he is, one cannot very well go after him with a follow-up system. The daily papers will probably reach him as effectively as any means of advertising, but the thing that will pull him in stronger than any printed word is your reputation. The fact that you give every buyer a square deal; that you look after the customer's interest as well as your own; that your guarantee means something; that it is a pleasure to do business with you, etc., is sure to leak out. The obvious conclusion is, therefore, that to draw your share of the business of the self-developed prospect class, reputation will prove the most powerful magnet.

It would pay some dealers to get out among their customers in disguise. If they were willing to learn they would discover some amazingly wholesome truths that would cause a startling change in policies and methods.

DEALER WHO FOUND PROFIT IN "PROFITLESS" GASOLENE

"I have made a hit this spring and summer selling gasolene to Ford owners at practically what it cost me," says Dutee W. Flint, Providence, R. I., Ford dealer, in the "Ford Bulletin." "Perhaps my experience in this matter may interest you Ford men.

"At the outset, I had no idea how popular the plan was going to be. It looked to a good many motorists hereabouts as if the price of fuel was being pushed higher than necessary. We heard lots of grumbling. One day I had a chance to buy about 1,000 gallons of gasolene right. I put up a notice in my salesroom that Ford owners could have the gasolene 'while it lasted' (a la department store ad.) at cost.

Thousand Gallons Didn't Last Long.

"Believe me, that thousand gallons didn't last long!

"When it was gone, the brethren kept at me for more. I had a stream of them in the store all day, every day for a week. Prospects took an interest in the matter; they kept asking our salesmen if they could get gasolene at cost, should they buy a car. Many of these questioning prospects were 'hard customers'—men our salesmen had about given up. You know the kind I mean! The immense popularity of the idea set us a-thinking. Result: So far this season (June 15) we have turned over 76,679 gallons of gasolene strictly to Ford owners. I buy in big quantities, store in my own tank, and sell at the bare cost of goods, plus a small handling expense. One man gives his time and attention to this department. It is no trouble to the regular staff—and I come out whole financially. No dollars and cents profit—that's the idea; we give the Ford public the benefit of our buying and ask nothing in return but good-will.

Publicity and Good-will the Profit.

"Q—Where does our profit come in?

"A—Profitable publicity.

"I have kept a close watch on our gasolene experiment. My personal observations, together with salesmen's reports, warrant me placing the number of sales since February 1st, in which low-price gasolene played an important part, at 200 cars.

"Besides, to my thinking, it is another tie that binds the whole Ford family closer together, at least the Rhode Island branch of that grand, universal family of Ford owners."

CLEANLINESS AN EFFECTIVE ADVERTISEMENT FOR GARAGES

Cleanliness is a great advertisement for a garage. It may take the form of clean windows, shining and spotless in the noonday light; on the other hand, it may be the garage floor which is dustless and free from rags, odds and ends and dirt, and just as spick and span as the housewife's kitchen; again, it may be the clean sink, where customers and employes can wash hands and wipe them on a clean, white towel, that attracts patrons. But this one thing is sure—that cleanness never fails to attract nor dirt to repel. A dirty garage or salesroom, like a dirty suit of clothes, advertises the owner as careless—and it is hardly the kind of advertising that pays.

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HOW A 20% PROFIT MAY BE PROFIT OF LESS THAN 20%

Adding One-fifth to Cost Does Not Give a One-fifth Gain on Selling Price — Fallacy Explained — Comparative Percentages.

If a dealer buys a car for $1,000 and sells it for $1,200, what per cent. profit does he make on his selling price? No, he doesn't; he makes 16 2/3 per cent. If he wants to make 20 per cent. profit on his selling price it is necessary to add 25 per cent. to the cost —not 20 per cent. It sounds puzzling, but it illustrates the wrong course of reasoning followed by many business men every year in figuring profits.

As a concrete illustration: Suppose a dealer buys his cars at a certain price, adds 20 per cent. of this price, sells them at the advanced figure, does the same with all accessories and supplies, and at the end of the year had $120,000. Is his profit 20 per cent. of the $120,000? Decidedly not; it is but 16 2/3 per cent. To make 20 per cent. profit on the selling price, he must add 25 per cent. to the cost, thus giving him $125,000. A little arithmetic will show where the twist comes; he has made 20 per cent. on his cost, but 20 per cent. of his gross receipts is not profit. He has made $20,000, which is 20 per cent. of $100,000, the cost, but not 20 per cent. of $120,000, the selling price. If he adds 25 per cent. of the cost, or $25,000, the selling price will be $125,000 and the profit $25,000, which is 20 per cent. of $125,000. Other percentages are:

5 per cent. added to cost is 4¾ per cent. profit on selling price.

7½ per cent. added to cost is 7 per cent. profit on selling price.

10 per cent. added to cost is 9 per cent. profit on selling price.

12½ per cent. added to cost is 11⅛ per cent. on selling price.

15 per cent. added to cost is 13 per cent. profit on selling price.

16 per cent. added to cost is 13.8 per cent. profit on selling price.

17½ per cent. added to cost is 15 per cent. profit on selling price.

20 per cent added to cost is 16 2/3 per cent. profit on selling price.

25 per cent. added to cost is 20 per cent. profit on selling price.

30 per cent. added to cost is 23 per cent. profit on selling price.

33 1/3 per cent. added to cost is 25 per cent. profit on selling price.

35 per cent. added to cost is 26 per cent. profit on selling price.

40 per cent. added to cost is 28½ per cent. profit on selling price.

50 per cent. added to cost is 33 1/3 per cent. profit on selling price.

60 per cent. added to cost is 37½ per cent. profit on selling price.

70 per cent. added to cost is 41 per cent. profit on selling price.

80 per cent. added to cost is 44½ per cent. profit on selling price.

90 per cent. added to cost is 47.4 per cent. profit on selling price.

100 per cent. added to cost is 50 per cent. profit on selling price.

Here's the Vest Pocket Route Guide.

The asking and answering of questions at crossroads and doubtful places still is a conspicuous part of automobile touring, and



CALDWELL'S POCKET GUIDE

probably always will be; but what with road maps, both "live" and otherwise, route cards and the like, the task of picking out the right road is considerably easier than it once was. And it is the aim of Henry Caldwell, of 137 East 16th street, New York, to make it even easier through the use of cards that fit into a leather case, leaving only the face of the top card exposed. The case is arranged to be buttoned over the rim of the steering wheel right under the eye of the driver. The arrangement of the information is shown in the illustration.

The running directions on the cards, which number 360 and cover New York, Long Island, New Jersey, Pennsylvania and New England, have also been bound in the form of a vest-pocket book with flexible leather cover; the book contains a key map with routes numbered to correspond with card numbers. For those who use cards only the key maps will be furnished free. It is planned to extend the scope of the scheme to cover the entire country, which will call for some 3,000 cards and six books. Garage and hotel lists will be included when this is done.

KISSEL COMMERCIAL LINE GIVEN NEW TONNAGE RATES

Three Models Are Lightened and Six-Ton Vehicle Added — Sub-Frame, Spring-Supported Motor Construction for All.

In figuring out what could be done in the way of improving its line of trucks preparatory to launching a new series, the Kissel Motor Car Co., of Hartford, Wis., apparently found little that could be criticised in the machines, for apart from the things that are stereotyped as "minor details," the changes decided upon are chiefly concerned with the capacities of the various models. Instead of tonnages of ¾, 1, 2, 3, 4 and 5 tons as formerly, the machines now run into intermediate capacities, the figures being ¾, 1, 1½, 2½, 3½ and 6 tons.

The motor suspension system is a new one with the Kissel people. The motor is bolted to a sub-frame and the sub-frame is mounted on four spring supports, the springs being compressed helicals, so that motion both up and down is cushioned. Left drive and center control are retained, as also is the four-speed gearset with selective control by a centrally located lever. Both radiator and fan construction have been improved, and the radiator spring suspension has been made a little better than in previous models.

The 1½-ton truck, the first of the new series to make its appearance, has a four-cylinder motor of 4¼-inch stroke and 5¼-inch bore, rated at 36 horsepower, driving through a large leather-faced cone clutch. Final drive is through side chains. The front wheels are 34 inches in diameter and the rear wheels 38 inches, and the tires, which are solids, are 3½ inches and 5 inches, respectively. The wheelbase is 132 inches. Top gear gives a maximum speed of 10 miles an hour under the control of a Pierce speed regulator.

The loading space back of the driver's seat is 8 feet long in the regular models, though a 10-foot length can be had at a slight extra cost. The weight of the chassis is 3,900 pounds. The turning radius is 25 feet. The usual truck equipment of two oil dash lamps, horn, jack and set of tools is provided. The chassis is sold separately "in the lead" or the car complete with any desired style of body.

Clark Truck Nearly Ready for Market.

The F. G. Clark Co., of Lansing, Mich., which has been developing a motor truck for some time, has its vehicle almost ready for the market. Clark himself is a former Detroiter.

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"My Best Sale and Why I Regard It as My Best"

Indiana Salesman, in Competition for Motor World's Awards, Tells How an Early Morning Chance Prospect Bought on First Demonstration—Weaving Birthday Sentiment Into the Argument That Closed Sale.

By J. H. McKINNEY, Columbia City, Ind.

It was in the month of June, and as I turned the key in the lock and pushed open the door of one of the leading branch houses of the Middle West, the clock on the wall registered the seventh hour of the morning.

It was a beautiful morning, and I was feeling even better than the weather. I had risen shortly after sunrise, taken a cool dip in the tub and had motored downtown to get an early start after some of my particular prospects.

I had just stepped back into the offices to get some necessary papers, when I chanced to look out upon the street and noticed a lady and gentleman stop in front of the salesrooms; they were looking over my demonstrating car. Well, you know how a fellow's heart goes out to a person admiring his car, and I lost no time in letting that good old heart of mine take me with it.

Nice Morning an Aid to the Sale.

Stepping up to their side, I remarked upon the beauty of the morning and how refreshing it was to be out humming over the country roads inhaling the crisp morning air. Every "old fisher" who has handled a rod and reel has made at some time a freak cast. That's just what I did right there. Being strangers to me and also to the city, I just "cast" as I myself was feeling from my morning spin. "Ker-splash!" Away went my "spinner," as I heard the lady remark to her companion, "That's just what the doctor told us both," I immediately got busy with my reel handle attached to the car, and almost before the echo of her words had ceased I sat behind the steering wheel with the gentleman by my side and the lady resting contentedly in the rear seat.

Out to the country I headed as fast as good judgment and speed laws would permit. I chose a course along the river banks, where I knew I could find plenty of good old health-producing air and beautiful scenery.

When I had reached an ideal spot along the road, I arose and invited him to place himself behind the wheel and see what real sport really was. It did not take any coaxing, for the voice in the rear was "for" me, and we were soon bowling along at 15 miles an hour.

Motor World offers four awards of $30, $20, $15 and $10 for stories by salesmen of what they regard as their best sale. Have you ever made a sale which you think required real salesmanship? If so, send your story before September 1. Your name will not be used if you so request. The competition is open to every salesman in the automobile trade, whether he sells pleasure cars, trucks or accessories.

Silently we wended our way around the river, up the hills and down through the crop-laden valleys, the man absorbed in his work, the woman drinking in the beauty of the ride; and as for myself, I was giving my "fish" plenty of line, consisting mostly of the wonderful advantages and benefits that were being reaped by the use of the motor car.

Shortly we drew near to a very favorite spot, which I'll call the "Chicken Inn." I turned the key in the switch and let the car come to a standstill right in front of the door.

Breakfast Fitting End to Drive.

I remarked that, having forgotten my regular morning exercise commonly known as fighting flies from the breakfast table, that I would indeed be pleased to have them join me at this particular time and place. That 12-mile drive had worked wonders with those two frail appetites, the same as it had with mine; in fact, the house lost money on those three meals.

Two good cigars and a packet of gum started us back to the city, and then I began to land my cast. Out-bound I had noted and studied my man from every point and had grown to know their likes and dislikes pretty well. I learned that they had come to the city to look at one of our competitor's cars, but had found their salesroom locked and had just strolled on up the street until they had reached our place. Being the first car they had come close to, they stopped merely to look it over.

Interested in my work and in my companions, I had not fully thought who was driving until we had crowded a horse into the ditch and missed the buggy only by the narrow margin of a couple of inches.

This just put the finishing to his driving; in other words, it gave him full confidence in his ability and had its share in the sale later.

Arriving at the branch, I took no chances, but drove them to the rear and into our garage before letting them out. Here I took them through our repair and parts departments, showing them our method of taking care of our owners' cars and our ability to supply any part or number of parts, at any time upon a minute's notice. I made them feel that we were a great deal more interested in their welfare after buying than before.

Impressive Climax to a Real Sale.

Entering the salesroom, I requested them to sit in the floor model and note the comfort of a new car. Sitting in the car, they recited the story of their ill health and the advice given by their physician to secure a car.

I paid the strictest attention to every question asked and answered it in language that they could easily understand.

I talked but little of the mechanical features of our car, but instead laid great stress upon its comfortable, serviceable and durable qualities. I learned that the coming day was a birthday for the lady, so when I began to feel about for just that one little thing at the very last minute to help close the deal, I bumped right into this yearly birthday present idea, and "Slap! Bang!" I let him have it full force. He had a wife, she had the birthday and, lucky for them both, I had the car—in fact, they didn't have to wait several days or perhaps weeks for it, but they could get it now—this very car they were in—and could spend the next day on a birthday joy ride going back home. You should have seen that little woman get on my line also; and as I handed him the order book and pencil she leaned over the back of the front seat and—well, for his sake I looked the other way, but I heard the smack, followed by that pleasing sound of the pencil chasing itself across the order pad.

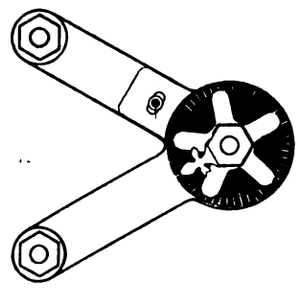
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HARTFORD SHOCK ABSORBER WITH GRADUATED FRICTION

Old Maker Modifies Original Idea to Compensate for Big Bumps and Little Ones—New Construction Made Plain.

The fact that the retarding effect of a shock absorber should be at its minimum when the car is riding over smooth roads and at its maximum when the going is very rough has been recognized by the Hartford Suspension Co., of Jersey City, N. J., in fitting its latest models with a device which brings about just such a state of affairs.

The accompanying illustration shows that the new "automatic" model differs but little from its predecessors in appearance, at least. The upper arm, however, really is a compound arm and is in three parts. One is the regular long arm extending from the friction joint to the point of attachment to the frame, while on each side of it are short-



TRUFFAULT-HARTFORD "AUTOMATIC"

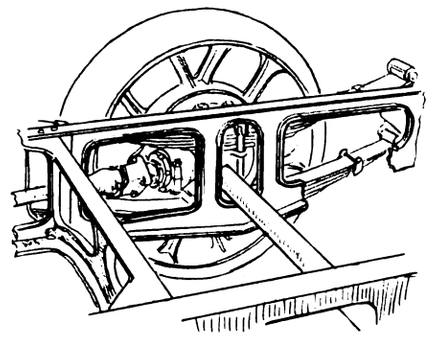
er arms, the front one showing in the picture.

The short arms receive motion through pins on the long arm; but as the pin holes are elongated, the short arms do not commence to move until the oscillation is sufficient to move the pins a greater distance than the length of the slots. The back arm has the longest slot. On smooth roads the long arm only is working, and the friction is slight. A rougher road causes a wider range of movement, and the front short arm is picked up on the pin, and it doubles the friction. A very rough road increases the swing of the car on its springs and the second short arm is picked up, still further increasing friction. Thus there is ample retardation when it is needed, but not when it is unnecessary.

Develops Unusual Frame Construction.

Whether or not it has sufficient merit to warrant the trouble and expense of the decidedly complex construction involved, the frame, drive and spring design of the British Austin delivery wagon certainly is ingeniously worked out and is, to say the least, different from others, as is very clearly shown in the accompanying illustration of the rear end of the machine.

The frame, to begin with, is of open girder construction, which undoubtedly gives great vertical stiffness for a given weight of material, and the rear axle, of the dead type, passes between the upper and lower members; vertical integrally formed braces extend between upper and lower members before and behind the axle, which thus is in a sort of slot in the frame, the opening being amply large to afford all the play required even on the roughest roads. While it is difficult to say whether the frame should be called underslung or overslung, as it really is both, it is equally difficult to



AUSTIN FRAME DESIGN

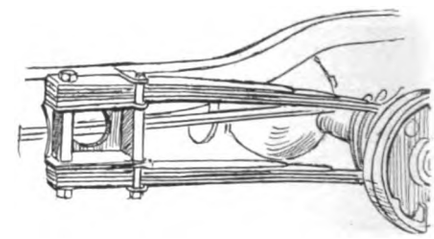
apply proper terminology to the springs, which are in the same dubious class. There are two semi-elliptic springs, one above and one below the axle, which is rigidly clipped to the centers of the springs. No torque rods or radius rods are required with this spring arrangement, despite the fact that the drive is taken wholly through the springs, for there is sufficient rigidity for the purpose.

Most unusual of all, perhaps, is the driving system, which is of the bevel gear type, despite the fact that the axle is dead. The answer to the seeming conundrum is that there are two separate drives, one to each rear wheel, each wheel having its separate propeller shaft, bevels, housing and so on; the shafts are, of course, fitted with the universal and slip joints necessary to compensate for both vertical and longitudinal relative movement between the frame and the wheels. The details have been worked out with extreme care, and the machine is said to be a decided success, at least from a mechanical point of view. One advantage that is claimed as a result of the somewhat extraordinary construction is a very low loading platform and a low center of gravity. It is also said that all the working parts are very accessible, though it is a little difficult to see how the bevels are to be reached any more readily than with the usual type of single shaft drive—in fact, it would seem as if access were less easy, to which must be added the fact that there are two sets of bevels instead of one.

DOUBLE CANTILEVER SPRING EVOLVED BY BRITISH MAKER

Unusual Construction that Materially Increases Resiliency by Reducing Internal Friction—Damping Effect not Sacrificed.

The variations that are possible in the arrangement of springs are almost endless, though it goes without saying that some of the possibilities are not practicalities. The accompanying illustration shows a rear suspension employed in a British gasolene car, the Waverley; the resemblance to the Lanchester or cantilever design is plain, but there is the important difference that, instead of the single spring of the Lanchester system, there are two springs, one terminating above and the other below the rear axle and with their butt ends clipped to and spaced by a bracket which is bolted to the frame of the car. The arrangement is said to be extremely easy-riding and to possess shock-absorbing qualities to an unusual degree. The principle of subdividing the springs into a considerable number of thin leaves is one that is recognized as being conducive to quick response to vibration, and the use of two comparatively light members instead of one heavy member eliminates a certain amount of spring friction and permits strong construction and simple and satisfactory fastenings at the axle end.



BRITISH WAVERLEY SPRINGS

Work and Overwork for Starters.

An engine-starting electric motor is designed to turn over the engine as much as may be necessary to start it under all ordinary conditions, and usually has a considerable surplus capacity so that abnormal conditions may be dealt with to a certain extent. That is no reason, however, why the electric starter should be kept turning the motor over if it refuses to start, instead of promptly locating and remedying the defect that prevents starting. Electric cranking will not start a motor that is not in condition to start any more than hand cranking. If the electric motor is kept running it will so reduce the capacity of the battery that a start will be impossible when adjustments have been made.

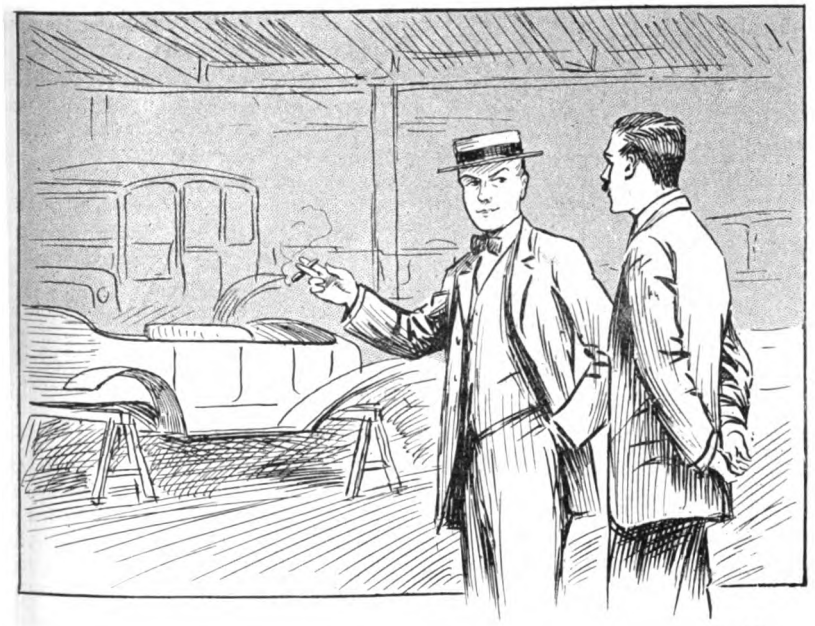
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TELLING THE TRUTH ABOUT NEW SERIES CARS

Reilly and the Sales Manager Discuss Relations of Manufacturer, Dealer and Prospect When Old Series Is Expiring—Reilly Declares in Favor of Frankness—Suggests How to "Move" the Old Cars.

"Come out into the factory, Reilly, and e how the new series cars are coming rough," said the Sales Manager, as he ose from his desk and reached for his hat. They're going to look pretty good."

"Everything moving according to sched-le?" asked Reilly, as the two went out ward the humming shops; if the Sales



"IF I CAN'T BE SQUARE AND SELL CARS, I'LL QUIT!" ASSERTED REILLY

lanager made any answer to the question eilly never heard it, for just at that mo-ent they opened a door and the screaming f a big turret lathe made inaudible all ore moderate noises.

Down between rows of smaller lathes and rills they picked their way and through e engine assembly, where Reilly insisted pon stopping to examine the first of the ew series motors which even then were ell on their way to the testing depart-ent. But the Sales Manager wanted eilly to see some of the new bodies, which ere not so much different after all, and t this department of the factory they final-arrived.

"What's the idea?" asked Reilly, point-g to a body which in color, shape and early everything else stood out from the thers like a straw hat at Christmas.

"It's more than I can tell you; the cus-tomer ordered it that way; it's just an idea of his, I guess."

"Do we get these new ones according to schedule?" inquired Reilly, thumbing the as yet unattached end of a piece of up-holstery leather.

"I don't know why not," was the reply. "Everything is moving according to sched-ule. Why? Have you got some old series cars left over?"

"One or two, but that isn't worrying me; I was just wondering if I was going to be able to make deliveries when I expected. But Gott dir helfen if you slip up on my demonstrator!"

Doesn't Cover Up Points of New Series.

"Are you going to be able to get rid of the old series cars?"

"Oh, I guess I will," replied Reilly. "I always have."

"At list?"

"I ought to."

"Are you saying much about the new cars and the new starter? And the lower price?"

"I certainly don't cover it up," was Reilly's answer. "Why should I? People ask about those things, so I tell them."

"Doesn't it make selling the old cars harder to make a noise about the new cars while you have old ones in stock?"

"That's something that is the cause of a lot of trouble in the trade, Jim, but I've found that the best way out is to tell the truth and take a chance on landing right side up in the long run. I think it pays."

"That sounds logical, if you can do it, but most factories and dealers hesitate to attempt it."

Dealer's and Manufacturer's Problem.

"I know it, Jim, but it's something that's got to be figured out sometime or other; it puzzled me, and I thought it over for a long time before the matter resolved itself into a definite policy. Now I tell the truth to my customers pretty much and I find that it works out well."

"Don't we at the factory tell the truth, too?" inquired the Sales Manager.

"Yes, you're pretty square with the public," meditatively responded Reilly. "I suppose it is a problem with a manufacturer to unload his old product before his new is on the market, but, nevertheless, I can't persuade myself that it is right to do business the way some of them do. There are two phases to the proposition—the dealer's and the manufacturer's—and as concerns the manufacturer, I don't think some of them pursue a fair and honest policy in handling their product."

"For instance."

An Advertisement That Misrepresented.

"Well, there's the ——— company. You probably noticed some time ago, just at the time when people naturally expected they would be bringing out a new lot of cars, that they ran considerable advertising stating that in the new series of cars, or the new year's cars, whichever you chose to call it, they were obliged to boost prices a little, owing to the quality of car they were offering. They said it was a question either of cutting down the quality or of boosting the price, and that they firmly believed the public would rather pay a little more for such a good car than the same or less money for a car not as good.

"The scheme worked fine from the manufacturer's standpoint, temporarily, at least. People thought, 'Here's the ——— car, a

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mighty good car. I have been thinking of buying one. If I wait it will cost more than it does now, and it is so good now that any little improvement won't make much difference. It has a starter, electric lights and is thoroughly modern. I guess I'd better get one now.' The result was that the stock on hand moved off quickly and when it was time for the new series the old cars were all cleaned out.

Cut the Price Instead of Raising It.

"But then what? Instead of boosting the price, as they had said they would, they brought out the new series with a cut in price; of course, there was a fine explanation as to why it had been found possible to lower prices instead of boosting them, but do you suppose people are going to fall for that kind of bunk? Not for a minute! Those who bought the old series cars on the strength of that promised raise in price are a pretty sore bunch of people now. They find themselves stung to the extent of one or two hundred dollars in each case. And do you suppose anything that manufacturer says in the future is going to have as much weight with them as his previous statements did? I don't think so."

"Oh, Lord! We wouldn't do that!"

"I know you wouldn't," continued Reilly. "But it only shows you what some of them will do. I may be old-fashioned in my business methods, but I never could swallow this high-finance stuff. That goes for the dealer's end of it, too. To start with, no dealer should get more cars than he is fairly sure he can sell. If he works on that basis he ought to be able to be pretty well cleaned out by the beginning of the next season. But there are dealers, and not a few of them, too, who deliberately misrepresent things to their trade in order to move the cars of an expiring series.

Said He Knew Nothing About New Cars.

"One dealer whom I know told one of his customers—I suppose he told all of them, for that matter—that he had no idea when a new series would be out or what changes were contemplated in the line. And all the time he was telling it he knew they were going to add a little 'six,' and that it would be announced in about two weeks. He succeeded in selling the customer a 'four,' and so far as the car itself was concerned it gave the owner the best of satisfaction. He had no fault whatever to find with it, but I'll bet money he'll never buy another car of that dealer.

"And why? In two weeks the company opened its advertising campaign and flashed the new little 'six'; the owner went to the dealer and asked why the dealer had said he didn't know anything about the new car. The dealer still insisted that he hadn't known anything about it until the ads were almost ready, while at the time the ads appeared he had his demonstrator on the floor. The owner said that if that was all the dealer knew about the line of cars he handled he was a damned poor dealer and that if he had known more the dealer was an infernal liar, all of which is true; and any man with common sense, the owner included, will incline to the belief that the dealer was a liar."

"Why didn't he try to make a trade and sell him one of the new 'sixes'?"

"The owner didn't want a 'six' particularly; he was satisfied with the 'four,' but it did rankle when he thought how the dealer



THE SALES MANAGER WAS WANTED AT THE TELEPHONE

had put one over on him. He was mad on general principles."

"What would you have done?" asked the Sales Manager.

"I would have done what I do every year. If a man asks me if we are going to bring out a new series I tell him the truth about it. But here is an angle that is seldom thought of in that connection: If a man wants a car he wants it now, and the having it all the time between now and the time he can get a new series car is well worth while. When I get a prospect at this time of the year, or when an old series is on the verge of running out, and he starts that new series talk, I proceed to show him the car I have on hand and show him that instead of being about to become obsolete and a back number it is a mighty good piece of work.

"These periods generally are in the early summer, so far as the trade as a whole is concerned, and the summer time is when a man wants a car and wants it badly. At that stage of the game he is going to waste a good portion of the summer if he waits for a new series car, for while they will be announced in a few weeks and I will likely have a demonstrator, it will be considerably longer than that before I will be able to deliver a car to him; and meantime he has lost most of his summer touring. That argument, I have found, is unusually effective, especially with the prospect who really wants a car, for there is no argument so powerful with a prospect as his own desire for a car. When he wants it he wants it. He is liable to make up his mind entirely on the strength of one single, nice day; but when he does make up his mind he wants the car and wants it then.

Old Series Cars Not Back Numbers.

"If a dealer isn't overstocked he ought not to have so many cars that he can't get rid of them; and if he is overstocked somebody is to blame—and it isn't always the dealer. The improvements that are being made to-day aren't so much as they were some years ago, and the man who waits for a new series car isn't getting an entirely different car, as he used to when the industry was younger. The old series cars that are about to make way for a new series of cars are not a back number; they are perfectly serviceable and up-to-date, as cars ago. They will give any man satisfaction, and he is likely never to regret having bought one. They generally can be sold and sold on a right basis; all that is required is a little salesmanship."

"It sounds well, anyway," commented the Sales Manager.

"It's just as sound as it sounds, too," asserted Reilly. "But in any event, I won't lie to a man. If I can't be square and sell cars I'll quit."

"Quit what—being square?"

Would Lose Profit Rather Than Lie.

"I'll quit selling cars!" snapped Reilly. "If I have an old series car and can't get rid of it in any possible way before the new series cars come along I'll keep it, and if the new series cars are lower in price and I can't do anything else, I'll drop the old series car down to level with the new series car and sell it. I'll lose my profit on it before I will misrepresent things to my customers."

"But it's some problem, just the same," declared the factory man, "and it's one which ——"

Both turned as a shrill whistle sounded through the shop; when their eyes had located its source, they saw the foreman waving a summons. The Sales Manager was wanted at the telephone.

"Where have you been?" said the telephone girl. "I've traced you all over the shop, and always just a lap behind. Someone wants you in your office."

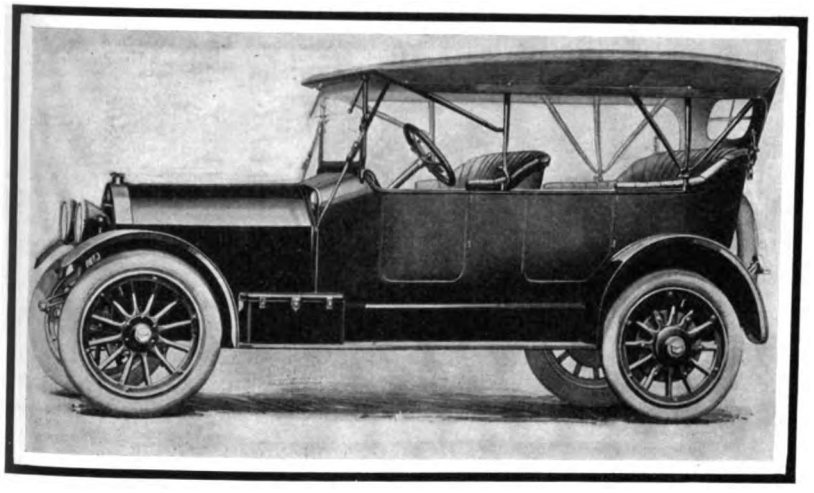
"Reilly's to blame for this, he coaxed me up here," he replied.

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IX CYLINDER MARION CAR BUILT ON STANDARD LINES

earset Mounted on Rear Axle and Controlled by Central Lever — Equipment Includes Electric Lighting and Starting.

It cannot be said that there is anything the shape of radically novel construction the car that marks the entry of the Mar- n Motor Car Co., of Indianapolis, Ind., to the six-cylinder ranks. The machine, enerally speaking, follows more or less onventional lines and sticks quite closely to onstructional features that are known to e good, as is clearly indicated by the brief escription published in Motor World sev- al weeks ago. There are not a few de-



SIDE VIEW OF MARION "SIX," LISTING AT $2,150

ails, however, that stand out because of heir merit and that show careful attention o little things.

By way of brief recapitulation, it may be tated that the motor is of the L-head type nd has three bearings, which are hand fit- ed; the cylinders are cast in two blocks f three each, and the bore and stroke meas- rements are 3¾ and 5¼ inches, respect- vely, which, it is plain, entitles the motor to ntry in the long-stroke class. The A. . A. M. rating is 33.75 horsepower and the iston displacement is 347.8 inches. The amshaft is driven by "silent" chain and the nagneto and pump by spiral gears. The wheelbase is 124 inches, the tires are 35 x ½ inches, and the equipment, which is eally complete, includes a Westinghouse lectric lighting and starting system.

While the new machine is built in two nodels, known as model G5 and G2, the hassis is identical in both cases, the differ- nce being that in the case of model G2 he body is of the two-passenger roadster variety, while in model G5 the body is a comfortable touring body with seats for five passengers.

A detail of the motor that is better grasped by a glance at the illustration than by perusal of an extended description is the construction of the exhaust manifold, which is so formed as to give the exhaust gas the easiest possible path to the muffler. To this end the cylinder branches are connected with the main pipe of the manifold at such an angle that the gases have extremely easy turns and back-pressure due to resistance in the manifold is reduced to a minimum. The fact that all the valves are on one side makes it comparatively easy to enclose them in tight compartments. An ingenious method of lubricating the valve mechanism and at the same time eliminating the usual breather pipe consists in drilling small holes from the crankcase into the valve mechanism pockets, so that the alternations of pressure in the crankcase serve to blow a mist of oil on the moving parts of the valve operating gear and keep it well oiled without other special provision. Small holes in the cover plates provide against accumulations of pressure. The oil formerly wasted is used by this means, the breather is done away with and the task of keeping the exterior of the engine clean is made just so much easier.

Drive from the Westinghouse starting motor is effected through a "silent" chain transmitting power direct to the front end of the crankshaft, there being a reduction of 15 to 1 in the system. The chain and its sprockets are enclosed in an oil-tight casing and the system that lubricates the motor is made to take care of the starter drive, too. The magneto—it is a high-tension machine and forms part of the dual ignition system—is coupled to its driving shaft by flange couplings so arranged that changes in timing of as small an interval as two degrees can be made without fussing with the gears. The system is simple enough, consisting in the drilling of bolt-holes in such positions that by shifting the bolts from one set of holes to another the required changes in timing easily can be made. This is a detail which, though it might be considered insignificant by some, is like a revolver in that it is not needed very often, but when it is needed it is needed badly.

Power is transmitted from the motor to the rear driving mechanism through a disk clutch running dry and having nine driving and ten driven plates. The propeller shaft lies between the clutch and the gearbox, the latter being mounted on the rear axle, rigidly bolted to the differential housing. Three speeds are provided, with the usual selective control through a centrally placed ball-handled lever, the high speed or direct drive having a ratio of 3¾ to 1. The rear axle is of the full floating type; drive from the live shafts to the wheels is not through the usual dogs fitting into notches, however, but through flanges extending from the shafts and bolted to the hubs of the wheels. The wear that occurs in driving notches and dogs thus is eliminated. Both sets of brakes are of the internal expanding type housed in pressed steel drums on the rear wheels, and the braking surface is large enough so that the wheels can be locked without exerting any great pressure on the lever or the pedal, as the case may be. The rocking shafts and other brake connections are worked out in a decidedly neat manner and all are amply strong to stand the stresses that are likely to be placed on them.

As in the past, the Marion chassis is mounted on springs of English Sheffield steel, the front springs being semi-elliptics and the rear springs three-quarter elliptics. The eye-bolts in the springs are made hollow and act as oil reservoirs, and wicking is provided to carry the oil gradually to the bearing surfaces. Once the little reservoirs are filled, the driver can forget this part of the car for months at a time, and there are no grease cups or oilers to forget and to get knocked off.

A decidedly sensible method of carrying the spare tire on the rear of the car is a feature of the new Marion. The usual pocket and set of straps is replaced by a tire rim securely bolted to the car; on this rim the spare tire is placed and held by a single lug which is easily loosened with the tire wrench, holds the tire firmly and can be manipulated a good deal more quickly and easily than a multiplicity of leather straps and buckles.

The car is thoroughly up to date in the matter of control. The steering wheel is on the left side, the ball-handled gear-shifting lever is in the center with the brake lever beside it, and there is a cowl-board on

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which are ranged the volt-meter, ammeter, the gauge indicating the pressure of air in the 20-gallon gasolene tank hung at the rear of the chassis, 60-mile speedometer, switches, etc.; the board is placed sufficiently far under the cowl to be protected from the worst of the weather, but not so far as to be obscured from view. The electric motor starter is set in motion by pressure on a special pedal. A feature of the fuel system is a gasolene gauge with its dial at the top of the cylindrical tank where it is readily seen.

As might be expected of a car which is regularly fitted with an electric lighting and starting system, the equipment is thoroughly good and includes top with cover and side curtains, 60-mile Stewart speedometer, rain vision windshield, robe- and foot-rails and the usual tools and the like. The rails and the usual outfit of tools, jack, tire repair kit, tire irons, and the like. The price complete is $2,150.

Applying Theory in Taking up Wear.

When the steering gear and connections become worn and loosened to such an extent that the front wheels show signs of wabbling on the road, it is high time to take up the lost motion. The wabbling looks like the dickens; but what is far worse, the thumping and pounding due to the lost motion greatly increase the rapidity of wear. In other words, the more a part is worn the faster it will continue to wear. Another way of considering the matter—and this is an angle of view that may be applied to all wearing parts—is that it is much easier to take up very slight wear and do it several times than it is to take up the total amount of wear in one operation. The chief reason is that as wear increases it becomes unequal, and when it is necessary to take up a great deal of wear a satisfactory job cannot be made, as a rule, unless the surfaces are refitted.

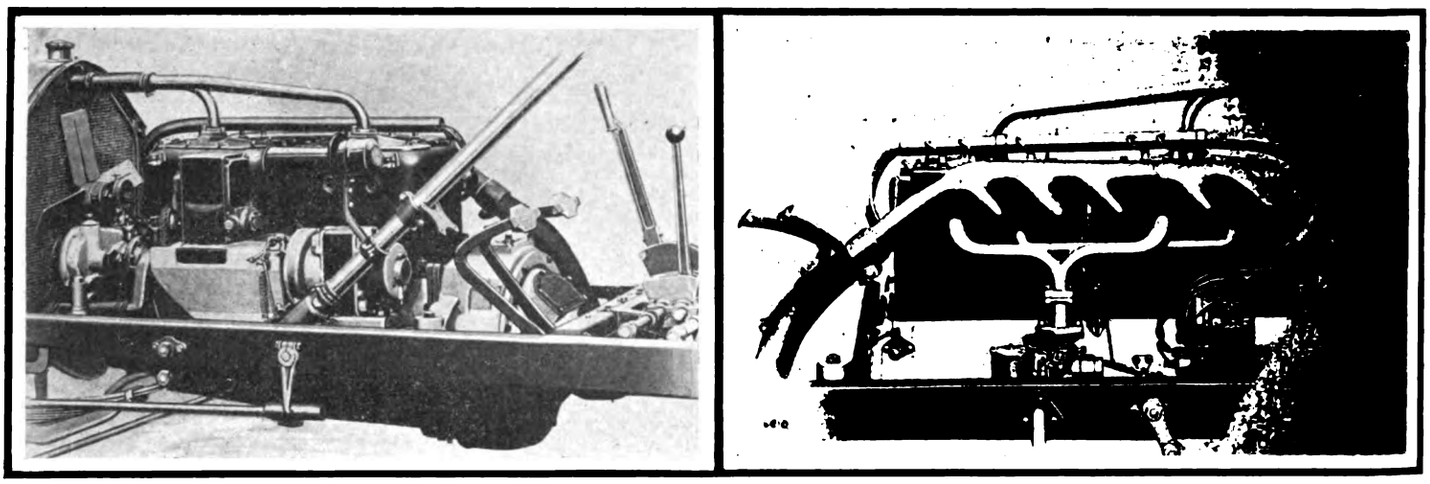
BRITISH COOLING SYSTEM SQUIRTS WATER IN CYLINDERS

No Water Jackets and No Overheating Despite Overloads — Heat Taken Directly from Combustion Chamber Walls.

The bold proposition to cool the cylinders of a gas enginse by spraying water against the inside walls of the combustion chamber and the head of the piston, thereby eliminating the water jacket, has been made by Professor Hopkinson, a British engineer and scientist, who has taken his own medicine to the extent of equipping a 50-horsepower stationary engine with a spraying system and testing it under actual service conditions. The engine has run for no less than two years and, though the results are said to have been entirely satisfactory, it is only now that details of the method have been permitted to escape.

The spraying device includes a "rose" or multiple jet head with holes 1/40 of an inch in diameter through which water, forced in by a small plunger pump operated from the camshaft, is thrown directly on the walls of the combustion chamber, the cylinder head and the head of the piston The idea is to effect cooling, not by reducing the temperature of the gases, as is done when water is injected with the charges, but by abstracting heat directly from the heated cylinder walls. This amounts to taking up heat already wasted, and therefore of no value from a power point of view, while the spraying of water with the charge takes heat and pressure from the burning gas, chiefly, and very little indeed from the cylinder walls. An exhaustive series of tests was made to determine accurately these facts, and it was found that the beneficial effects of injecting water with the gas were very slight and had little actual cooling effect.

The engine tested by the British engineer not only ran satisfactorily without a water jacket, the cylinder being a plain, smooth casting, but it developed practically continuously greater power than it would develop for a short time only with a water jacket, without heating, and proved economical in fuel consumption. Water was sprayed only on the cylinder and piston heads and on the walls of the combustion chamber, the injection taking place while the piston was at the head end of its stroke; thus interference with lubrication was entirely avoided, and it was found that the cooling effect was all that could be desired, the convection of heat through the piston being sufficient to keep the cylinder walls cool below the combustion chamber. A rather curious thing is that, despite heavy deposits in the cylinder, due to dissolved matter in the water, there was no pre-ignition, due, of course, to the effectual cooling of the coated surfaces.



RIGHT AND LEFT SIDES OF MARION "SIX," SHOWING ELECTRIC INSTALLATION AND MANIFOLDS

Variety in Hub Cap Threads

Although every one does not know it, hub caps are of two varieties—right hand and left hand. Which is to say, the hub caps on the right side of the car facing the radiator generally are fitted with right-hand threads, whereas the others have left hand threads. It is obvious that turning a left hand thread in the same way as a right hand one would be turned to loosen it will tighten the left hand thread instead.

To Keep Dirt Out of Tires.

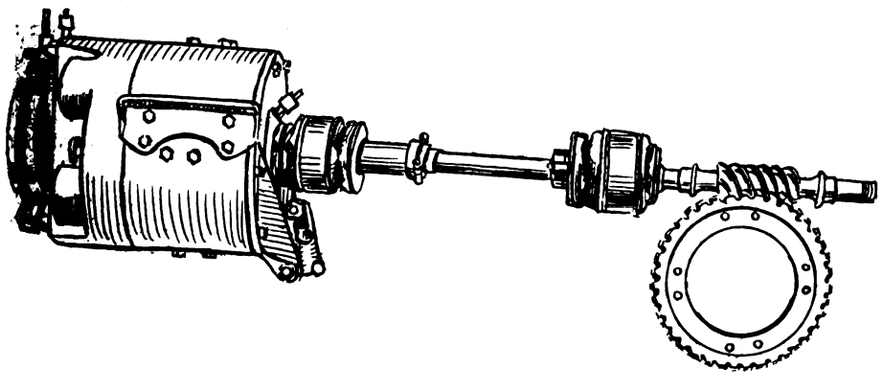
Because tire pumps invariably are carried beneath the tonneau seat and also because dust and dirt are certain to lodge there, it is a wise precaution to "blow out" the pump once or twice before the hose is connected to the tire valve. In this way the possibility of forcing dirt into the tire will be avoided.

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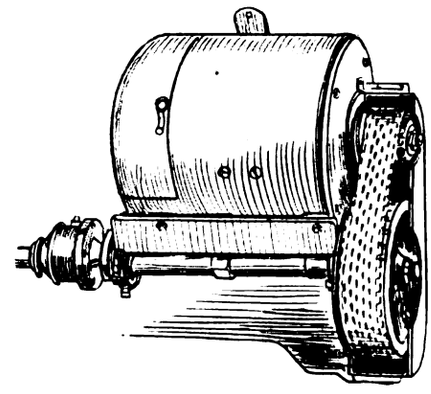
SHAFT DRIVE SYSTEMS FOR ELECTRIC CARS

Various Highly Developed Methods of Applying Simple Mechanical Device—Propeller Shafts in Worm, Bevel, Spur and Chain Power Transmission Systems—Long Shafts, Short Shafts and Almost No Shafts at All.

When the purchase of an electric pleasure vehicle is contemplated, it is safe to assume that the "contemplating purchaser" has bestowed due consideration upon the almost spectral quietness with which a good electric is capable of running and also upon the comparatively recently acquired ability of the "lightning wagon" to cover a good round distance on a single charge of the battery. In fact, anyone who listens to the seductive—and usually truthful—arguments of a salesman, or peruses the ornate pages of the artistic catalogs the electric car makers issue, must be impressed with the fact that the electric is, par excellence, a machine of few sounds. And it may be said that quietness and efficiency are very apt to go hand in hand.



RAUCH & LANG MOTOR AND WORM DRIVE



DETROIT CHAIN AND SHAFT

Economy Goes With Silence.

When electric vehicles were young their gears were constructed much upon the order of the back-gears of a lathe, to judge orally; and it is certain that the mileage in proportion to the volume of current consumed was very much lower than it is at present. The causes of noise usually are also causes of inefficiency—friction, lost motion, lack of adjustment and so forth and so on—and prodigality of noise and of power have decreasesd concurrently; and though it hardly can be said that they have decreased in the same degree—for in that case the car would run on next to no current—it is perfectly correct to say that eminently satisfactory progress has been made in both respects.

Conspicuous among the trends in electric vehicle construction has been the widespread adoption of shaft drive from motor to rear axle, to the elimination of numerous gears and chains. As shaft drive has become more and more conspicuous in gasolene car construction, to the practical elimination of the once popular chain drive to the rear wheels, so the manufacturers of electric cars, working out their own salvation in their own way, have come to the conclusion that shaft drive is best for them, too, and have made it their own, of course with the changes and modifications necessitated by the difference in motors and other governing conditions. Widespread is the correct word, not universal; for though shaft drive is greatly in the ascendancy there are other driving systems that have been developed to a remarkable degree, and which ask no odds whatever of the shaft systems. These have been taken up in detail in Motor World in the past. But the fact that a large number of different makes of electric cars are employing shaft drive brings up the point that there must be various methods of employing the shaft in order to comply with the special requirements of special cases, and these different ways of bringing about similar results make it interesting to look into constructional details to see just what points of difference there are in some of the better known electric pleasure cars with shaft drive.

The variations in shaft drive methods range all the way from the extremely simple to the moderately complex. That is to say, some systems have the least possible number of mechanical parts, while others have cared less about keeping down the number of parts than for attaining some end which has necessitated the use of comparatively complex mechanism. To the latter class belongs the drive employed in the Church-Field electrtic, which augments the low-speed pulling power of the electric motor by a gear reduction obtained through a planetary set of special design, the final reduction being through bevel pinion and gear in the rear axle.

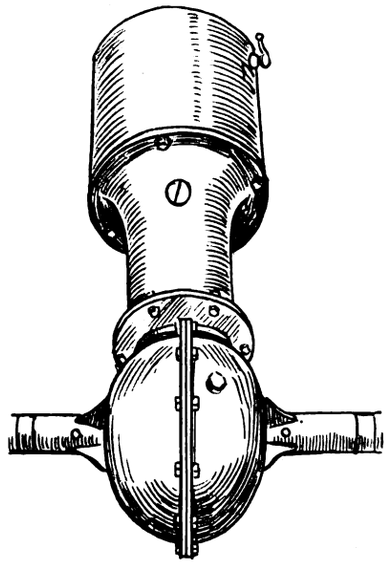
It would not be fair, however, to lay stress on the complexity of the Church-Field system, for while it includes a two-speed gear, which other electric systems do not, the gear is of the planetary type, which not only is among the simplest devices of its class, but to all intents and purposes is eliminated when the car is running "on high," as it rotates in unison with the motor and the shaft just as if it was a flywheel or other solid part. And even when its gears are working, when the car is "in low," it is wholly lacking in delicate parts and components that are likely to make trouble.

Multiplying the Torque.

As for the reason to which the planetary gear owes its position in the driving system of an electric car, which usually is considered all-sufficient with no gearing other than that which is necessary in order to obtain enough reduction to permit the motor to run at its normal rate while driving the car at is normal speed, it is that with a low gear it is possible to increase the hill-climbing capacity of the machine without increasing the size or weight of the motor, making possible the surmounting of difficult grades with a minimum current consumption. This is due to the fact that the

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motor is permitted to rotate at comparatively high speed while the car moves at a moderate pace. Also, as there are five controller speeds, which are effective on both high and low gear, the car has a total of no fewer than ten changes of pace, which, of



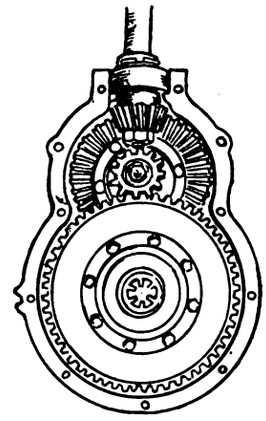
HUPP-YEATS SYSTEM

course, makes for convenience in handling in traffic. It may be added that the control system is of such simplicity that it adds practically nothing to the trouble of driving the car.

Torque of "Gas" and Electric Motors.

The application of a two-speed gear to an electric drive calls for designing along somewhat different lines than when such a gear is used in a gasolene car. The torque characteristics of an electric motor are very different from those of a gasolene motor. The electric motor is capable of drawing an enormous amount of current and exerting a heavy pull at very low speed, while the gasolene motor, as everyone knows, becomes less and less effective as the speed drops, and must be kept going at speed if high power is required. It is a difficult matter, however, to produce an electric motor that will be as economical in the use of current through a wide range of speeds as it is at a single speed, whatever the rate may be, or through a comparatively restricted range. Therefore the Church-Field people find that by designing the motor and the two-speed gear to work in harmony, the gears permitting the motor to run at all times at a reasonable speed, a substantial economy of current is effected—and no one needs to be told of the importance of this saving in a vehicle which is restricted in the matter of available energy, as is an electric.

Going to the opposite extreme and reducing the electric drive to what would seem to be the simplest form possible with an axle of the live type, the Argo Electric Vehicle Co.'s system may be cited as a striking example. In the ordinary acceptance of the term, there is no shaft drive—that is to say, there is no shaft between the motor and the driving pinion. The housing which carries the motor is bolted direct to the housing of the rear axle, and the motor shaft is extended only sufficiently to carry the bevel driving pinion. It is obvious that there is no necessity for universal joints and no necessity for special provision for keeping the motor in alignment with the axle, for with the housings forming what is practically a unit, there is no opportunity for any relative change of position.



STANDARD DOUBLE REDUCTION

The bevel gears are of the herringbone variety that has been brought to such a pitch of efficiency and quietness by electric vehicle manufacturers.

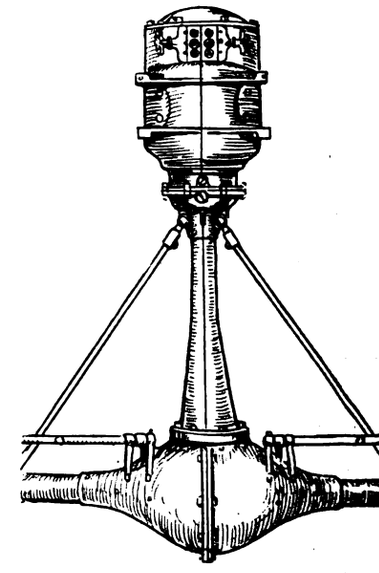
Another excellent example of the most direct driving system is found in the Hupp-Yeats electric. As the illustration shows, the motor casing is bolted direct to the rear axle casing, as in the Argo, though there are some differences that are plain to the eye. The chief difference between the two, however, is in the fact that the Hupp-Yeats employs bevel gears of extreme accuracy for the drive, and not only are the gears made, hardened and finished with the utmost closeness, but there is a screw adjustment which permits a final setting of almost microscopic fineness, the result being that the gears are made to run under the best possible conditions.

Worm and gear drive has brought to the manufacturer of electric vehicles a transmission system with possibilities in the way of lack of noise, large reduction of speed at a single step, smooth operation and economy of space that have been eagerly seized upon, developed and made practical and efficient. Observing the running of a worm-driven electric, it is a practical impossibility to criticize. The frequently employed term "velvety" actually describes the power application, and as for noise, it is a practical impossibility to locate any, apart from the faint hum of the motor and the swish of the wheel spokes and tires. The peculiarities of the worm system, as well as its advantages, have been taken into full consideration by the makers of the Rauch & Lang electrics. Of course, the worm system is preeminently a propeller shaft system, and in the Rauch & Lang the absolute necessity for absence of forces tending to interfere with the vital matter of accuracy in the relationship between worm and gear has been recognized, and the worm freed from all stresses other than those which are normal by providing the propeller shaft with two universal joints, one close to the motor and the other close to the worm, and a telescopic joint which is incorporated with the universal nearest the motor.

Straight-line Drive with Normal Load.

The design of the vehicle as a whole is such that when the weights are normal the motor, propeller shaft and worm are practically in a straight line, and the points are subjected to a duty that is so light as to be of no practical account, which also is true of the power lost through the joints. It goes without saying that the joints are provided with casings that afford perfect protection from dust.

The striking feature of the shaft drive employed in the Standard Electrique is that, while a double gear reduction is used, all the gears are housed in the rear axle casing, with the result that their alignment is no less perfect than their protection from the



DETROIT MOTOR AND AXLE

intrusion of outside influences, whether in the form of dust and dirt or of a more forcible nature, tending to disturb alignment. The motor is suspended from the frame of the car at the forward end of a comparatively long tube which encloses the propeller shaft and, by virtue of its substan-

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tial construction, renders unnecessary the use of universal joints. In fact, the motor is practically a unit with the rear axle. Any possibility of disturbing the angle between the tube and the rear axle casing is provided against by a pair of heavy braces extending from the axle, at a point close to the spring perches, to the motor casing.

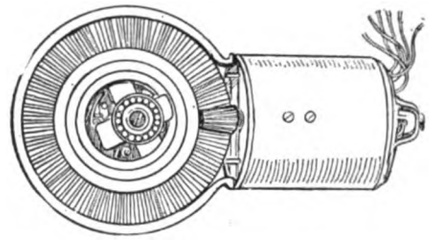
The propeller shaft drives through a bevel pinion to a bevel gear which, however, is not as large in proportion to the pinion as is usual because of the second reduction. This further step-down is effected through a spur pinion, mounted practically as a unit with the bevel gear and meshing with a spur gear on the differential. The extreme compactness and neatness of the system is well shown in the illustration; but its smooth running and practical efficiency can be appreciated only by actual experience with a Standard car.

But One Gear Reduction in Detroit.

A motor that is especially designed to operate at a low normal speed—that is to say, 800 revolutions per minute—is an extremely important factor in the design of the transmission system of the Detroit electric car, in that it necessitates only one gear reduction, and that of moderate ratio. As in the Standard, the motor is connected by means of a tube with the rear axle casing, and is braced by rods which prevent relative displacement. While a slow-speed motor, such as is used in this car, necessarily is of larger size than a high-speed motor of equal capacity, the makers state that the increase in weight is offset by the decrease in the weight of the transmission system. Further, it is claimed that the larger motor and heavier windings are particularly well able to withstand the heating effects of overloads of long duration and will give an extremely good account of itself in slow, hard pulling. Despite the rigid construction of the casings, assurance that there will be no binding in the bearings is made doubly sure by inserting a universal joint between the motor shaft and the propeller shaft.

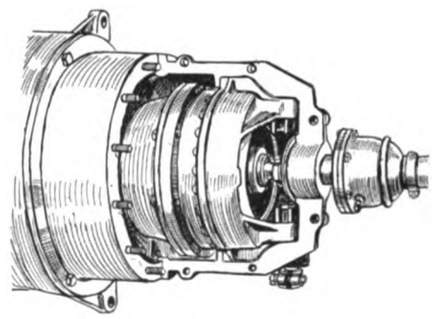
Double Reduction by Chain and Bevel.

At once simple, silent and efficient, the double reduction system that is embodied in the shaft transmission of the Baker electric is obtained by the use of a combination of chain and bevel gear drive, the chain being of the "silent" type and operating under the most favorable conditions. A short shaft, parallel to the motor shaft and carried in a casing bolted to the motor casing, is driven by the "silent" chain, there being, of course, a considerable reduction in the relative speeds of the motor and driven shaft. The propeller shaft is virtually in line with the short second shaft, the connection being through a universal joint, while a second universal is placed where the propeller shaft makes connection with the short stub shaft of the bevel pinion. The propeller shaft itself is bare, but the short shaft at the motor end of the system is completely enclosed, together with the chain and its gears, and so is thoroughly protected, while the bevels are housed in the rear axle casing in the usual way. As is usual in shaft drives where universal joints are employed, the shaft system forms a straight line when the car is normally loaded, and the universals have only to compensate for the movement due to spring action.



ARGO BEVEL GEAR DRIVE

Despite the very considerable differences that exist in the various driving systems, and despite the very considerable differences of opinion harbored in the minds of respective makers—for it is but to be expected that each will consider his own system decidedly superior to all others—when it comes down to actual service under every-day conditions all the better cars will be found to have transmsisions that are remarkably efficient as well as remarkably quiet in operation. The manufacturer who uses gears or chains can take advantage of certain constructional features that are not open to users of direct connected motors, and on the other hand, the absence of intermediate speed reduction mechanism permits forms of construction that the user of gears or chains cannot command.



CHURCH-FIELD TRANSMISSION

In this respect electric cars are very much like anything else that is made by human hands. No one machine can possibly combine all the advantages of all forms of construction. Otherwise it is not difficult to see that there would be but one kind of car built, and it would be more nearly perfect than most things are. But one form of design appeals to a man—or a woman, for the electric is largely a woman's veheicle—where another will not, and this is entirely regardless of efficiency, power and so on. There even are cases where a purchaser would be willing to sacrifice things of some little importance in order to be exactly suited in some particular respect. Fortunately, however, it is possible for most people to get what they want in matters of detail without having to sacrifice things that are vital, and it is safe to say that if a purchase is made from any of the well-known makers the buyer can very safely seek to satisfy his ideas as to small matters, if he wants to, and take it for granted that the essentials of the machine are as they ought to be.

Handbook That Makes "Gas" Engine Plain.

From the veritable flood of so-called textbooks on automobiles and automobile design and construction which in reality are little more than glorified catalogs and are valuable chiefly as such, it is refreshing to pick up the revised and practically rewritten edition of Roberts's Gas Engine Handbook that just has been brought out by the Gas Engine Publishing Co., of Cincinnati, Ohio; like its predecessors—this is the seventh edition—it is a small book, but it is chock full of useful information, well illustrated and written in a style that will neither tire the engineer nor confuse the layman. The book is chiefly valuable because it is practical rather than densely theoretical In any book of the kind formulas are a necessity, of course, but where those given in the Roberts's handbook are even slightly abstruse their use is made very plain with the aid of practical example. Design, installation and care of both gas and gasolene engines are treated very fully and particular attention has been devoted to the two-cycle type of machine with the view of correcting the very erroneous ideas concerning it which still obtain. The volume is very completely indexed and cross-indexed—a feature that is absolutely essential in any book of reference.

Insulating Quality of Shellac.

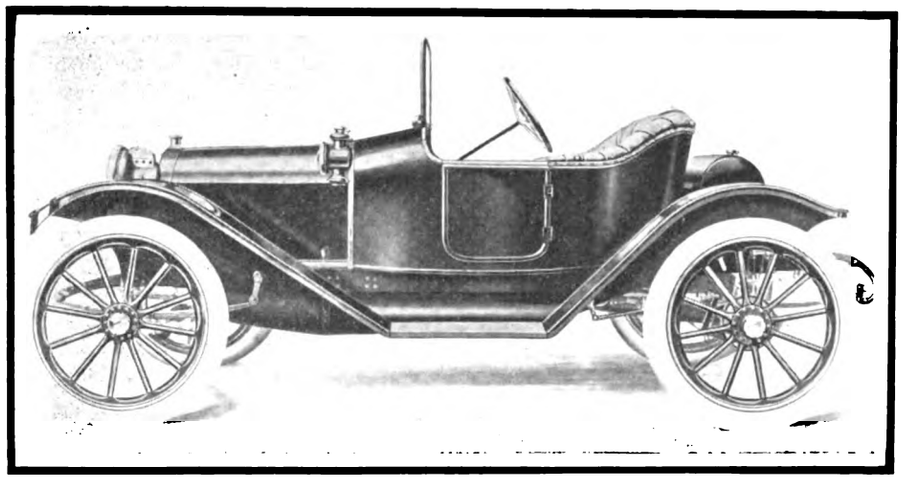
Shellac is used to such a large extent in electrical work that the impression has spread abroad that it is a particularly fine insulating substance. Such is not the case, for while shellac is an insulator to a certain extent, it is not by any means as good for the purpose as are many other things. It is extremely useful, however, as a protective coating, as a sort of cementing medium, as a filler and so forth, and its quick-drying qualities make it extremely convenient to use.

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VULCAN SINGLE-MODEL CAR ENTERS LOW-PRICE FIELD

Touring and "Speedster" on Same Chassis Sell for $850 and $750 Fully Equipped—Unit Power Plant and Left Steer.

The right way to build an automobile is to build it complete, from the ground up, in its own factory and without outside assistance, according to the Vulcan Mfg. Co., of Painesville, Ohio, which accordingly is proceeding to build Vulcan pleasure cars in this very way at its Painesville factory. And in this case building means not only the finishing and fitting of all the parts of the chassis and body, but even the making of the castings and forgings that enter into its construction. Special tools and machinery have been installed for the turning out of Vulcan car parts, and preparations made to produce cars on a large scale. These preparations have been in the making for a long time, and little has been known of what was to be expected, for the Vulcan people prefer to talk about what they have done, rather than what they are going to do.



VULCAN SPEEDSTER MODEL WHICH SELLS FOR $750

The Vulcan Mfg. Co. has as its president F. H. Murray; R. G. Ewell is vice-president, E. D. Heartwell treasurer, and these officers, together with H. E. Hammar, J. C. Ward, Wm. Truby, E. E. Lawrence and W. H. Backer, form the board of directors. The company has agreed on a policy of concentration on a single model, practically, though two bodies will be mounted—a touring car carrying five passengers and a roadster for two, the only difference in the chassis being the addition of a few inches in the length of the wheelbase in the case of the touring car and slightly heavier rear springs. The roadster, which will be termed a speedster, is listed at $750 and the touring car at $850, with complete equipment in both cases. Left steer and center control are standard.

The motor, which is the beginning of all things in an automobile, is of the block-cast type and has an emphatically long stroke—5 inches, as against a bore of 3⅜ inches—and, as the accompanying illustration shows, is mounted with the gearset as a unit power plant. It is stated that the rating of 27 horsepower is decidedly conservative and that the motor possesses to an unusual degree the ability to "hang on" at low speeds and to pull well uphill. The power plant is supported at three points, the single point being at the front, of course; the rear-end support is unusually stiff and heavy and is bolted through the center of the gearcase.

The crankshaft is of the two-bearing type and is 1⅞ inches in diameter at the journals; the rear bearing is no less than 5½ inches long. Both main and connecting rod bearings are of die-cast white bronze. As the motor is of the L-head type all the cams are on a single camshaft, the cams and shaft being made in a single forging. A center bearing provides a support which prevents springing of the camshaft. The valves are 1⅝ inches in diameter and the valve stems and springs are enclosed, the cover plates being removable by the loosening of a couple of handscrews. Ignition is by high-tension magneto, no battery or coil being used. The complication of a pump and its driving gear is avoided by the employment of thermo-syphon cooling, and a 12-inch fan is mounted behind the radiator. A plunger pump keeps the lubricating oil circulating; the oiling system is a combination of constant level splash and force feed. A reservoir under the crankcase holds 6 quarts of oil and a float gauge indicates the height of the oil at all times.

The clutch, housed with the flywheel in that part of the power plant casing which connects with the crankcase and the gearbox, is a leather-faced cone of generous dimensions engaging under the pressure of eight helical springs. The collar is fitted with roller bearings and the pressure required to operate the clutch is light, which is a point in favor of the car for feminine drivers. The gearset provides three speeds, selectively controlled by a centrally placed ball-handled lever, and a feature is that the lowest speed is exceptionally low, which gives tremendous leverage for pulling up precipitous grades, out of mud-holes, and makes it easy to handle the car in tight places where a particularly slow rate of speed is desirable. The gears are all of 3½ per cent. nickel steel and have teeth that are unusually wide for the size of the car, the maximum face being 1⅛ inches and the minimum ¾ inch. The H-plate is cast into the top of the gearbox.

An ingenious idea is that of casting the front half of the universal joint socket integral with the gearcase; the socket is completed by bolting on a pressed steel cap. The ball is a drawn steel product pressed and riveted to the end of the torque tube. The universal joint itself is of heavy steel forgings and the hollow ball forms a grease-tight enclosure for it. The bearings of the joint are said to be considerably larger than is usual in such parts, so that looseness can occur only after long use and much service.

The propeller shaft runs on ball bearings in the torque tube. It is of sturdy construction and so are the bevel gears, which have a tooth width of 1¼ inches and are cut from solid 3½ per cent. nickel steel and, like other gears, heat treated. A feature of the rear axle system that is even more noticeable than its other good points is the differential, which is evidently intended to last at least as long as the car, for it has no less than five pinions that run on phosphor bronze bushings and are of the nickel steel that is so extensively used in the machine. The inner bearings of the live shafts are 4 1/16 inches in diameter with ⅝-inch balls. The construction of the axle is of the semi-floating type. The shafts are of ample size for their work, having a diameter of 1 3/16 inches. Conventional practice is followed in the design of the brakes, the emergency brake being an internal expanding ring operated by a lever and the service brake a contracting band operated by a pedal; both are lined with an asbestos material and act on pressed steel drums.

Lightness and strength are combined in the tubular construction of the dropped front axle, while the steering yokes are drop-forgings. The steering knuckles have a diameter of 1⅜ inches. Front wheels run on ball bearings, the inner bearings having ⅝-inch and the outer bearings ½-inch balls. Rack-and-piston steering gear is employed.

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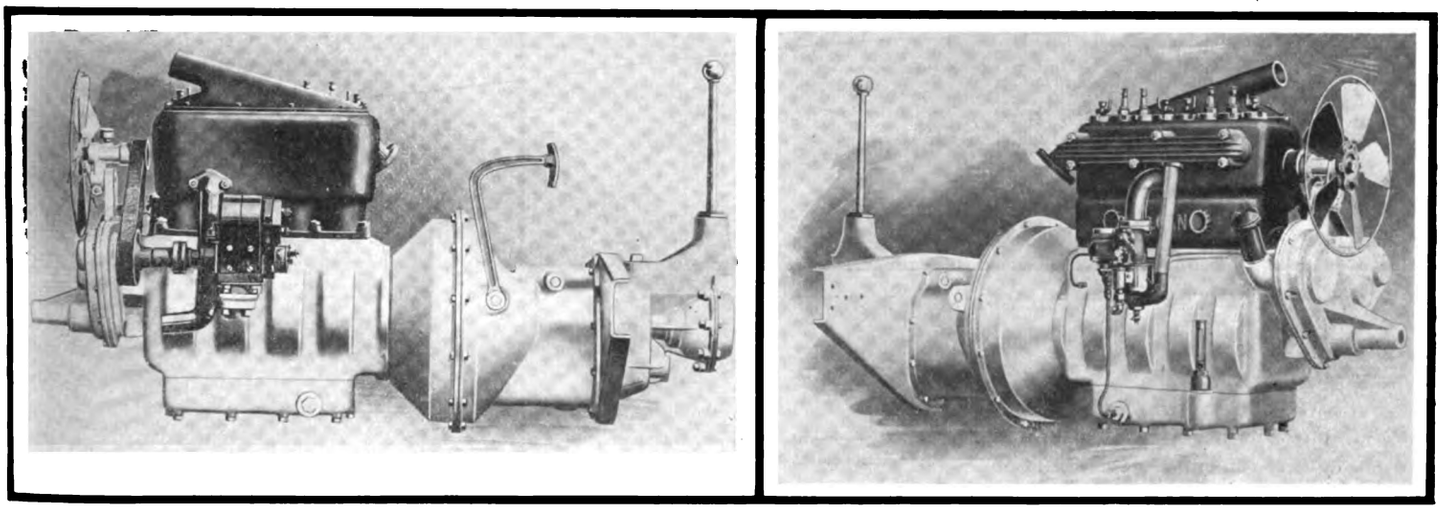
and this is said to be of a type which practically eliminates back-lash and wabbling of the front wheels on rough roads. The steering wheel column is sharply raked and is fitted with a 16-inch wheel; the pinion end is carried just above the front axle, where the necessary connections can be made with a minimum of apparatus. The front wheels are set at an angle of 3 degrees from the vertical, which brings the center of contact of the tire with the ground directly in line with the produced axis of the steering pivot. The car can be turned within a circle 30 feet in diameter, which is quite short when the length of the wheelbase is considered.

Something of a departure from conventional design is embodied in the frame construction, though the Vulcan people still have adhered to what has been thoroughly tried and found satisfactory in actual service. Instead of the usual channel-section, the pressed steel of the main frames is given a deep inverted U shape. The fact that there are two vertical webs affords enormous stiffness and resistance to vertical stresses. There are three well-braced cross members, one at each end, and an intermediate which serves to support that rear end of the power plant, as already described. The frame rests on semi-elliptic springs in front and three-quarter elliptics in the rear, the latter being 44 inches long and 1¼ inches wide. The front springs are almost flat and the rear springs are scrolled and have thin, tapering ends, all of which has a decidedly beneficial effect on the riding qualities of the car. The spring bolts are of steel, accurately fitted, and means are provided for the lubrication of the bearing surfaces of the spring eyes.

In the case of the "speedster," the wheelbase is 105 inches, while the touring car measures 115 inches from axle to axle and has slightly heavier rear springs. Gasolene tank construction is substantial, the tank being riveted together of heavy steel plates, lead-coated to prevent rust, and soldered at all seams; the ends are concave steel stampings. In the runabout the tank is behind the seat and in the touring car it is under the front seat. In both cases it is high enough to give an ample head of fuel to the carburetter. The gasolene capacity is 14 gallons. In both models the wheels are of kiln-dried hickory with 12 spokes 1¼ inches in diameter and the tires are 32 x 3½ plain white tread clinchers.

The body is of sheet steel laid on a substantial frame of live oak reenforced with drop-forged body irons. The seat is wide and deep, as is quite plain from the illustration, and the upholstering is comfortable and soft. As to the matter of finish, the body is painted a deep olive green, while the fenders, hood, gasolene tank and running gear are finished with two coats of black japan baked on over a metal priming coat which not only prevents rust but causes the japan to adhere to the surface—a matter of no small importance. Five coats are applied to the green body, each being rubbed down before the next is applied. The fact that steel is the body material makes a larger number of coats unnecessary to secure good results. Bright metal parts are finished in bright nickel, while bolt and screw heads and similar parts are finished in black nickel, which will not readily show the effect of the application of a wrench or screwdriver, and at the same time adds appreciably to the appearance of the finish as a whole.

Complete equipment is included in the price of the car, and consists of a one-piece windshield with metal work given what is known as a "hard rubber" finish, mohair top with boot and side curtains, gas headlights with 9-inch lenses and mirror reflectors, Prest-O-Lite tank, oil side and tail lights that are said to be proof against rattling as well as smoking, speedometer, set of tools in brown canvas tool holder with a separate place for each tool, and the usual tire repair outfit, pump and jack.



MANIFOLD AND MAGNETO SIDES OF VULCAN MOTOR SHOWING UNIT CONSTRUCTION

To Avoid Trouble When Using Babbit.

When a bearing is to be babbited it is extremely inadvisable to put into the melting ladle any old chunk of babbit that may be lying around the place, and this for several reasons. Though it may be positively known that the metal is of good quality, the mere fact that it has been melted at least once may be sufficient to condemn it, for at each melting some of the ingredients pass off in the form of vapor, altering more or less the characteristics of those that remain. This is especially true if the metal has been overheated, or has been kept hot for a long time—and information on these points is not likely to be available when the lump of metal is discovered. The old rule to heat babbit until it is just hot enough to brown a soft pine stick is a good one and will prevent overheating; but repeated meltings, even without overheating, result in the spoiling of the metal. The best way to handle such work is to melt up as nearly as can be judged the quantity of metal needed for the job, and to use fresh metal for each new job. The old metal can be kept by itself and used for unimportant jobs, such as fillings, soft hammers and so on.

Putting Saws to Emergency Uses.

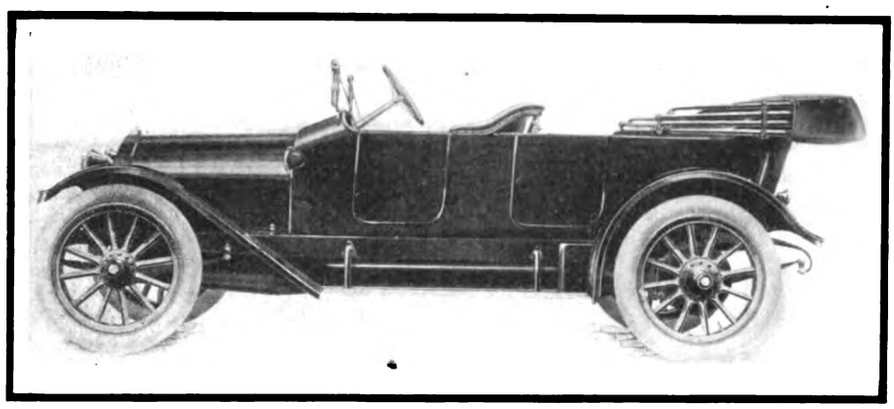
It is worth while to know that in case of emergency a butcher's saw makes a very fair hacksaw, especially for fairly soft metal, while a common cross-cut saw with fairly fine teeth can be made to chew through brass after a fashion. Needless to say, the cut will not be a clean one, and the teeth of the saw will be none the better for the experience.

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OVERLAND EARMARKS PLAIN IN SINGLE MODEL CHASSIS

Best Points of Older Machines Combined in Latest—Distinctive Overland Body Lines Retained—Coupe Much Improved.

The decision of the Willys-Overland Co., of Toledo, to concentrate its energies upon the production of a single chassis adds not a little to the interest in the machine that is to have such an important bearing upon the destinies of the company, and the information that has become available since a brief description of the car was printed in last week's Motor World serves to confirm the impression that the latest model differs but little from its predecessors. In fact, it embodies practically all of the older Overland features, though it goes without saying that there have been made detail improvements such as might be looked for in any good car under the circumstances. The horsepower of the new motor, which is rated at 35, should be ample for the roadster, touring car or coupe bodies that will be mounted on the single chassis.



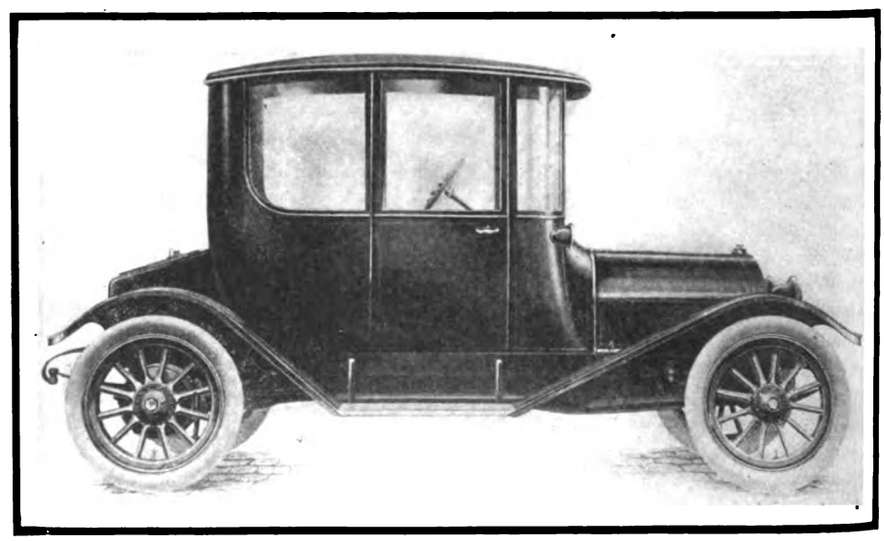
MODEL 79 OVERLAND TOURING CAR WHICH LISTS AT $950

In the matter of body design, the newest touring car—model 79—which has plenty of room for five passengers, is very similar to the older four-passenger torpedo known as model 69-F; the general outlines are practically identical, including the cowled dash, which was not a feature of last year's five-passenger 30-horsepower touring car. Obviously the interior amplifications required for the accommodation of five passengers have been made, but the cleanly designed appearance and lack of excrescences of the older body have been retained. The windshield shows considerable improvement; it is so built into the cowl that it stands firmly without assistance other than that given by a couple of light rods at the rear side, which are unobjectionable and inconspicuous.

In the roadster, too, the lines of the preceding model have been adhered to so closely that even a more than cursory inspection fails to detect much change, except at the rear end, where the sloping deck has been replaced by a horizontal-topped compartment which affords considerably more room for storage than did the smaller box. The addition of four inches to the wheelbase, bringing that measurement up to 114 inches instead of the former 110 inches, has added not a little to the general appearance of the car, and the effect of length and low hanging has been a trifle enhanced by an almost imperceptible difference in the curves and the setting of the mudguards.

Perhaps the most pronounced change is that made in the body of the coupe, which is built on the same chassis as the touring car and the roadster. And it may be said at once that the change is distinctly for the better. The body has been made considerably roomier, as is indicated by the fact that it seats four passengers in place of the three who could find room in the older coupe, and the windows are much larger, the supporting framework having been cut away with good effect. The angular front form has been changed to a curve, the glass front being curved in conformity with the coachwork, and the flare where the walls and the roof met at front and rear has been eliminated. The cowl effect between the hood and the body has been emphasized a little, and altogether the new coupe is better looking by several degrees than the older one.

As for mechanical changes, they are so slight that the increase of bore and stroke from 4 x 4½ inches to 4⅛ x 4½ inches and the substitution of the Splitdorf magneto for the one formerly fitted are by far the most important. The constant level pump lubrication system has been made a little better, and the push-rod guides now are held in their places on the crankcase by forged steel claws, so that their removal is an easy matter. Bronze caps on the tops of the push rods tend to reduce very materially the clicking of the lifters against the valve stems. A change, of some interest as being a reflection of the descending quality of gasolene, is the decrease in the diameter of the intake manifold, the object being to increase the speed of the gas through the piping and so improve carburation. Cooling has been improved a little more than the increased size of the engine has called for by the enlargement and general betterment of the radiator, which has a considerably larger water space than the older cooler.



OVERLAND COUPE MODEL SHOWING CURVED GLASS PANELS

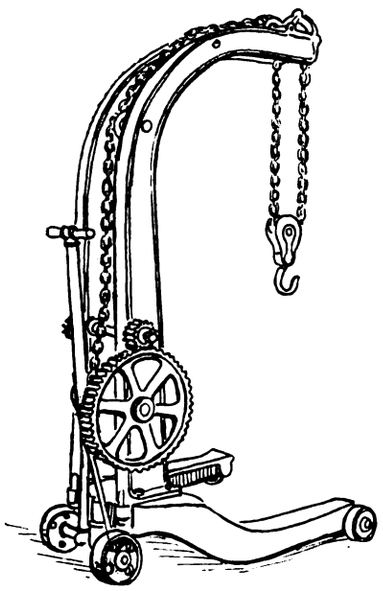
Taking it all in all, it is not possible to say much more than that the latest Overland chassis and its three bodies contain the good points of all the older models, with the addition of the detailed improvements that have been mentioned—and a few that have not because they are of the kind that do not appear to the eye, being in the shape of better material and the like.

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REMOVING GARAGE TIME LOSSES WITH A CRANE

Wasted Minutes That Come From Inability of One Man to Do Heavy Work Alone—One Garageman Who "Timed His Estimate"—Types of Portable Cranes Which Make for Efficiency in Repair Work.

John Quincy Davis was a garage proprietor with a purpose. He was one of those bright-eyed, enthusiastic individuals who believe thoroughly in the modified adage that "everything comes to him who gets out and hustles while he is waiting." He hustled with a definite purpose in mind, however; his other maxim was "Do one thing thoroughly before you attempt another," with "Don't start anything you can't



FRANKLIN PORTABLE CRANE

finish" thrown in for good measure. He lived up to all of them.

His garage was, and is, located in a fairly populous suburban town on one of the main arteries of travel between two large cities, and so a great deal of transient business fell to his lot. Altogether, what with repairing the cars belonging to tourists and repairing and overhauling the cars housed under his roof and quite a few housed under the roofs of other garages, he managed to keep his repair shop pretty busy, though he never would have done it if he had not lived up to the aforementioned adages.

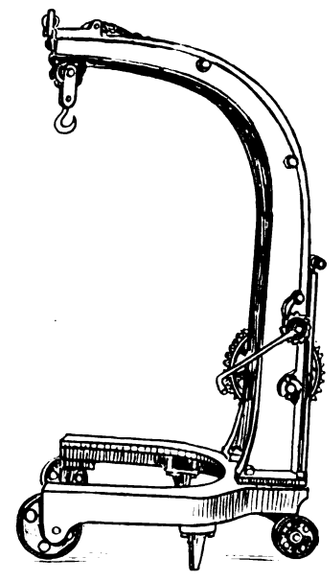
Efficiency—shop efficiency—was his particular bug and he had the bug trained so it would eat out of his hand. In the first place, he believed that if he promised repair or overhaul work would be finished at a certain time it was pretty poor business to offer excuses in lieu of the work. He was not very good at making fake excuses anyway—all the other garage proprietors in town beat him hands down at that game. When work was not finished on time according to schedule, George Washington had nothing on John Quincy Davis. He simply had to tell the truth and, as refreshing as frankness may be on occasion, the owner of the car seldom relished being told that he would have to wait "till to-morrow" for his car because John Quincy Davis's shop equipment was not quite as complete as it might have been and as it should have been. That was years ago, and after making one or two excuses of the kind Davis learned his lesson.

Learning Why Estimates Fell Short.

He had heard that the poor workman invariably blames his tools, and here he was making excuses for the lack of proper tools. He had a big machine lathe and enough power to run it, and a grinder and a shaper and a drill press; also he had plenty of space for work benches and a good assortment of the tools that look funny to the layman and good to the mechanic. All of which was just as it should have been, and he could not understand, quite, where the discrepancy came in—why his estimate of the time required to overhaul a motor, for instance, invariably fell short of the actual time required.

He was in and about the shop most of the time, but he could not sit in a high-chair like the referee in a tennis match and keep tabs on his workmen. He had his office work to do, for one thing, and besides, he was dealer for a line of cars and he never wasted an opportunity to talk car to anyone who seemed interested enough to listen. Hence, he had to be in his little office a good part of the time, talking by word of mouth or through the agency of a typewriter. He had his bookkeeping to do, too. He made a practice of sending carefully itemized statements of all work done and all material used, and he got his bills paid, too. But that, as almost-poet-laureate Kipling says, is another story.

He could not, if he would, be continually at the heels of his employes to see that they did things in the most efficient manner. He preferred to let them work out their own problems, provided they showed the slightest glimmer of originality in their methods, for the proceeding tended to give the men confidence in their own ability and actually taught them to rely upon themselves rather than upon the brain of someone else. Therefore, he kept away from the shop just a little bit more than his other duties made necessary, and he had no hesitation in doing so, for he had chosen his men by a process of elimination and he knew they would not shirk their duties. He



CANTON CRANE CONSTRUCTION

knew, of course, that every man was doing, though the man did not always know that he was being watched.

After Davis had made a couple of excuses for work that should have been finished before it was finished, he decided that there was a flaw in the amber somewhere, and he set about to discover it and to remedy it. Beldame's car had just come in for its annual overhaul, and he proceeded to check up with his estimate the actual time required to finish the job and in this way to discover, if possible, where he had slipped up, if he had slipped up at all. He "stood by" while the car was taken down.

Now, in his shop Davis had two good mechanics. They worked together whenever there was a job big enough to require the services of two men. One of the men worked under the supervision of the other, and at his order left whatever he was doing to fill gasolene tanks and sell oil and

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make hurry-up repairs on the machines of transients who stopped at the door. Generally such work required comparatively little time, but it could not be kept waiting.

The upper works had been taken off Beldame's car—which means the body and the engine hood and the radiator, etc.—and all the removable bolts and nuts holding the engine and gearset had been removed, and it began to look as if the job would be finished on time, after all, for so far everything was up to schedule. But when it came time to remove the gearset from the chassis, part of the discrepancy became apparent.

Eighteen Minutes of Enforced Idleness.

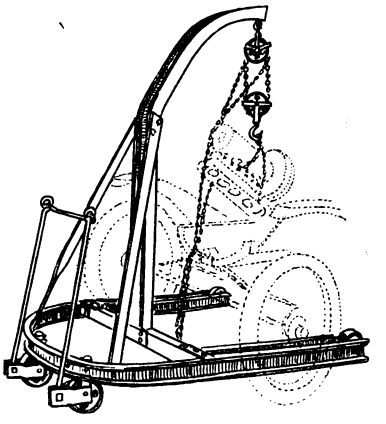
It was out of the question for one man to lift the thing out alone, and just as both together were getting at the job a tourist drew up in front of the garage with a noisy flourish of his Klaxon. He wanted "gas" and oil and a rear spring clip tightened, and while the tanks were being filled and the little repair job was done Davis kept his eye on the clock. Ten minutes, fifteen minutes, eighteen minutes before the tourist was sent on his way rejoicing and the gearset could be lifted out of the chassis and set on the work bench and, in the meantime, the one workman left on the job could not do more than twiddle his thumbs and wait for his helper.

It may have just happened that way, and it might not happen that way again in a blue moon, but when it came time to take the cylinders off the engine—honk! honk! at the door and off sped the lieutenant-mechanic to crank five gallons of gasolene into a tourist's tank and swap a fresh Prest-O-Lite tank for an empty one. Another 20 minutes lost on Beldame's overhaul job—though Beldame was not charged with the time, because Davis took "time out" while the man who remained on the job "cussed" in impatience at the delay.

Crane as Eradicator of Time Losses.

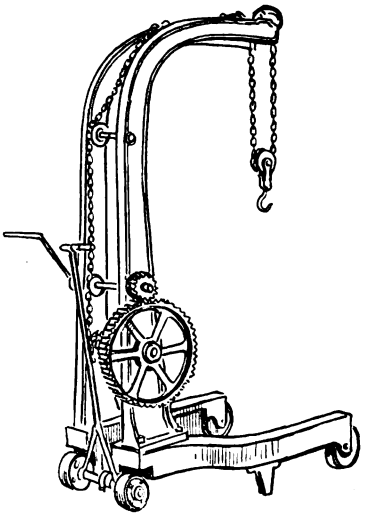
Half an hour is 30 minutes, of course, and the two half-hours make a whole big hour, which is equal to about 20 miles on the road in the sunshine. That's about the way the man who owns a car figures it out—"in an hour I could have been at Frog Pond and here I am at the garage." It's mighty dissatisfying, especially if the man has to keep friends waiting.

Here, figured Davis in his mind—and he saw the extra equipment he would need in his mind's eye—was the greatest little chance in the world to increase shop efficiency by substituting machinery for muscle, mechanism for men. So he retired to the innermost recesses of his sanctum sanctorum, which means that he slid in behind his rolltop in the office and pulled out a couple of catalogs from the lower left hand drawer of said desk—he made a practice of keeping all sorts of catalogs in the expectation that they "might come in handy some time"—and turned the pages rapidly until he came to the sections devoted to portable cranes. To the person with a little imagination the rest of the story tells itself.



CAMERON CRANE IN USE

David bought a portable crane of the type that is illustrated herewith, and now his jobs are finished when he says they will be finished. To lift the gearset out of a chassis, the crane is pushed into place, its fingers gripped under the arms—regardless



NILES-BEMENT-POND HOIST

of whether the lieutenant-mechanic is selling "gas" or swapping tanks or yarns—and after a couple of turns on the windlass the whole thing—crane, gearset and all—is pushed over to the work bench, where the gearset is deposited for future attention and the crane is then hooked up to the cylinders or to anything else that formerly had required the combined efforts of both men.

As Davis had at least his full share of common sense—which is more or less obvious from the fact that he used a few up-to-date proverbs for headlights, so to speak—he looked around a bit before he handed over his good cash for a crane, and discovered that there was quite a little variety in the different makes of load-lifters on the market, though for reasons that are obvious there also is a good deal of similarity. The similarity lies in the fact that all the "portables" have arms that extend under the work, and legs, or rather bases on wheels, that extend under it. The one Davis bought was a—well, it really doesn't matter, for he looked over the list and made his choice, which is just what anyone else can do and be pretty sure of getting a good buy. A good example of the principles that are involved in the construction of one of these handy appliances is found in the type built by the Niles-Bement-Pond Co. of New York, which is made in sizes the capacities of which range from 3,000 pounds to 8,000 pounds and will lift from 4 feet 6 inches for the smallest to 11 feet 3 inches for the largest. The body of the crane, the base and the overhanging double arms are of cast iron; the front axle is of cast steel of high tensile strength and a wide band of wrought iron reenforces the overhang. No matter how heavy the load may be, it is easily moved about the shop if there is a decent floor, for the wheels are mounted on roller bearings.

Construction of One Type of Crane.

The hoisting gear is simple and effective, consisting of a drum winch turned through a large gear meshing with a very small pinion, the latter being on the shaft of the hand crank, of course. The single chain forms what is called a two-part hoist, which means that the end is made fast while the "bight" is rove through a single block carrying a hook. The combination, while simple, is one that gives tremendous purchase and makes it easy for one man to lift all that the crane should carry.

An exceedingly convenient feature of the crane is that the handle by which the load is hauled acts as a sort of brake lever when it is desired to have the crane stand immovable. That is to say, when the handle is in the usual position for hauling the crane, the wheels will be free to turn, while if the handle is straight up against the column the wheels will be securely locked so that the crane cannot roll around when it ought not to. Or, rather, it would be more correct to say that the truck is locked to the floor, for what really happens is that by a crank arrangement, the weight of the machine is taken off the rear wheels and allowed to rest on two short legs that are plainly visible in the picture.

The method of "putting on the brakes"

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the apparatus manufactured by the Franklin Portable Crane & Hoist Co., of Franklin, Pa., is different from that of the Niles-Bement-Pond machine, for the "braking" consists in actually resting the weight of the machine on the front wheels, so that moving is out of the question. The axle is cranked, the single bearing being in the throw of the crank so that when the pulling handle is brought into a vertical position the cranked part acts as an eccentric and lowers the machine until the frame rests on the wheel rims, as is just happening in the picture. Roller bearings make for easy rolling on the shop floor. The hoisting gear is similar to that of the preceding machine—in fact, it is a type that is in common use in many kinds of small hoisting devices and is as useful as it is simple. The Franklin hoists will handle from 1 to 3 tons in the various sizes, and the capacities are tested before the machines leave the factory. The machine illustrated is of the low bed type, the frames being dropped to go under low places. The high frame type has high wheels and consequently is easier to move, though it requires a little more space vertically.

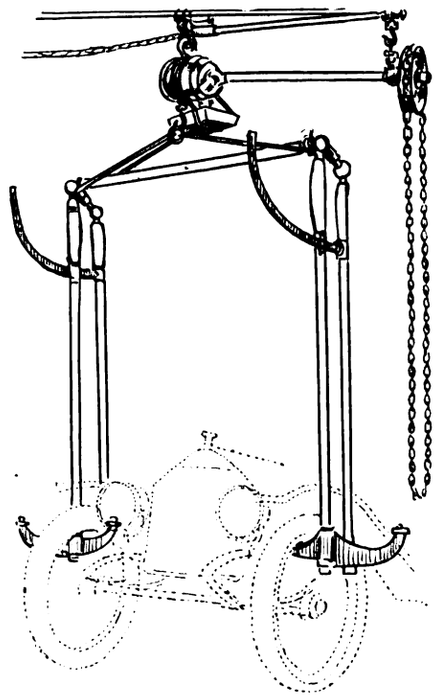
Has a Single "Steering" Wheel.

One of the differences between the Canton crane shown in the picture and the other machines illustrated is that there is but one wheel at the "steering" end—though other Canton models are built with two "steering" wheels, too. The single wheel has two bearings, and the usual system of raising and lowering the crane body by means of the pulling handle is employed; the machine is anchored by the feet, which rest on the floor, under the frame. The Canton crane is built with both low and high bed, the low being 6¾ inches high and the high 12 inches high. Steel axles and roller bearings are employed. This machine is built by the Canton Foundry & Machine Co., of Canton, Ohio.

A crane which differs considerably from those already described, though involving the same cardinal principles, is the Cameron, built by the Cameron Enginering Co., of Washington, N. J. As the illustration shows clearly, the construction is comparatively light, channel iron being used for the base instead of castings. It is in the hoisting apparatus, however, that the greatest difference exists, for instead of a winch arrangement attached to the column there is a differential chain hoist, which has the advantage that it can be worked from any point around the crane. This makes it easy for a machinist taking a job out of a lathe, for instance, to hoist the piece with one hand and steady it or slack back his tail center with the other. The Cameron hoist is made in smaller capacities than most others, the minimum being 1,000 pounds—a very handy size for small private garages. Incidentally, the price of a small machine naturally is lower than that of a large one. The crane is furnished either with or without the chain hoist. The largest size has a capacity of two tons.

"Cradle" Lifts Either End of Car.

While it cannot be said to come strictly under the portable crane classification, the Stone device is so nearly related to that tribe and withal is so obviously useful that it is worthy of more than passing mention.



STONE CAR CRANE

The actual lifting tackle is an adaptation of the differential chain hoist and is secured to a beam overhead and operated through a shaft, as shown. The interesting part, however, is the "cradle" which is so arranged that it will lift either end of a car by itself, or the whole car at once, in the latter case the four hooks which form part of the equipment being hooked into the four wheels, the second pair of rods being swung back for the purpose. The Stone hoist serves as a substitute for a pit because it is easy to get under the machine when it is lifted, and it also serve as a turntable, for the top suspension hook is fitted with a swivel which permits turning the load when raised. Altogether, it is a very convenient arrangement.

Davis found that while his portable hoist looked a little more bulky than he expected, when it first arrived, it would go into places where he had not expectetd it to go. This was because the bed not only would go under things, but its sprawling legs would go on either side of many an obstruction that otherwise would have made trouble. And Davis liked his machine, for, to use his own words, "It's some lifter, all right, for it lifted a big load off my mind."

Here's Another Differential Substitute.

It does not seem at all likely that the differential gear, in its present form, will be superseded for some time to come, despite its more or less well known failings and despite the efforts of engineers—and some who are not engineers—to devise satisfactory substitutes. Still, some of the ideas that are called forth by the desire to evolve something better than the "good old differential" are clever, in their way, and one recently devised abroad is a rather striking example.

In this arrangement the rear axle is not divided, but carries the bevel driving gear solidly keyed to it or, if desired, arranged to drive through a clutch on the axle. One of the rear wheels is rigidly fixed on the axle, while the other is loose and is driven through a clutch, of any suitable design. It is in the operation of this clutch that the ingenuity of the inventor has reached its height.

The mechanism controlling the clutch is so connected with the steering gear that when the car is moving straight ahead, or in only a very slight curve, the clutch will be engaged and the wheel will be driven, the same as the fixed wheel at the other end of the axle. Upon turning the steering wheel to make a pronounced turn, however, the clutch is thrown out, allowing the loose wheel to vary its speed with relation to the other, either accelerating, if it is on the outside of the curve, or retarding, if it is on the inside.

It is clear that the suggested substitute for the differential has several advantages over the accepted type—at least, in theory. When driving straight ahead on slippery going, the fact of one wheel getting on a slippery spot will have no effect on the driving power of the other, while with the conventional differential there is little or no power transmitted to the non-slipping wheel until the other has found a hold again. The same principle is involved when, in a fast-moving car, one wheel leaves the road and spins, while the engine momentarily races and no power is transmitted to the wheel remaining on the ground. A car stuck in the mud can pull far better with both wheels locked together than with the differential intervening—a fact which has given rise to numerous differential locks designed to overcome this difficulty. Last, but not least, the new plan permits a considerable reduction of rear axle weight, complication and expense. The idea may be applied to a cyclecar.

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BUILDING WINDOW DISPLAY ON IDEA OF SAFETY

Method by Which Value of Preventive Accessories May Be Doubly Emphasized—One Plan That May Be Followed—Nonskid Chains, Bumpers, Mirrorscopes and Other Devices Used in Making Up Whole.

Building a window display around some one article or accessory is a practice followed with advantage by numerous supply and accessory dealers, and while this is an effective means of window advertising, variations are possible; the "one article" window generally is built around some material object, but it is not impossible to deviate from material things and use them to construct a display around an idea or a quality.

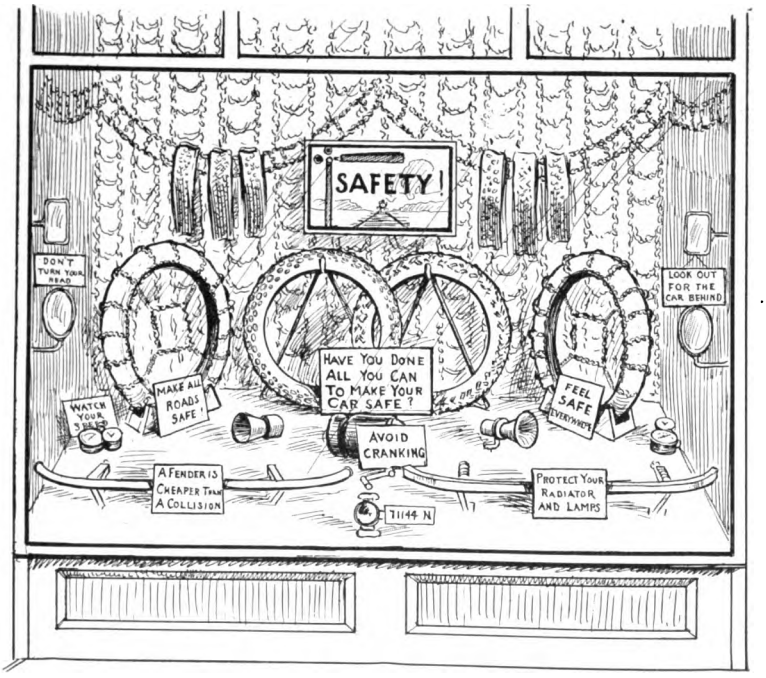
In talking of his car, a salesman is taught to sound its praises by enumerating the good qualities of the manufacturer's product; one car is said to ride easy, another is economical, another is durable, another possesses an element of safety, and so on almost without limit. Although manufacturers build these qualities into their cars, there is also a host of accessory and supply manufacturers who supplement the car builders' efforts with devices to promote safety, easy riding and other conveniences and comforts.

A window arranged around the idea of safety may be built up with little difficulty by any dealer who has window space, and as a suggestion of a line which may be followed, Motor World presents herewith a sketch of what may be done with one size and style of store front. The window contains articles designed to promote safety for both the passengers and the car.

As an eye-catcher, a large card may be placed in a conspicuous position, in this case the center rear wall, bearing the words "Safety" and a railway semaphore arm, the arm itself immediately suggesting the idea desired to be conveyed. Incidentally the lettered cards must be neat and attractive, else much of the value of the display is lost.

Of course, skidding is responsible for many accidents, wherefore non-skid tires and Weed chains may be effectively displayed with cards admonishing the car owner to take no chances against this frequent touring danger; bumpers, as any motorist realizes when the fact is called to his attention, are an efficacious preventive of broken lamps, bent fenders and dented radiators when installed upon a car. In case something breaks when ascending a hill it is not impossible for something to go wrong with the best of cars—a sprag which may be dropped to prevent the car running backward is an article to be appreciated.

When traffic is congested, rear-end collisions and accidents when turning into cross streets, may be avoided by the presence of a mirrorscope, which shows the driver what is coming behind him. These bright little devices may be shown to advantage if so placed that the passerby may look into them, fastened on the front and side of the window, allowing him to glimpse the entire street behind him. Other objects may be introduced into the display, and while one of them alone in a window might cause an observer to realize its necessity or value a whole window built around the idea of safety is many times more effective. In arranging the window, it is not necessary that the illustration, its style or the signs be exactly copied, for much will depend upon the individual taste of the owner and the size and style of the window.



WINDOW THAT CENTERS AROUND THE IDEA OF SAFETY FOR THE CAR OWNER

The Value of Business Courtesy.

"Lack of gratitude always has been a stumbling block to humanity, whereas honest gratitude, felt and expressed, is one of the sure stepping stones to success," said H. D. McCoy, of the Chanslor & Lyon company, Pacific Coast accessory dealers. "It has been truthfully said that the 'hereunto find our check' is about the most wilcome communication a business house can receive, but 'herewith find our order' is a pretty desirable sort of epistle, too.

"We must be sure that in every instance we are profuse enough in thanking customers for their orders and checks, particularly orders. Every once in a while we should lean back in our chairs and think over the little things—important among them—that we impress upon our customers forcefully enough that we do appreciate their orders.

"Acknowledging an order affords a mighty good opportunity (particularly if it is a new account) to assure the customer that the firm is conscientiously interested in him, his business and his welfare. But we must be sincere, or the custom becomes but a dead and unfruitful ceremony. It is a fine chance to bring in a personal touch and deal on a personal basis."

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BENSON ADVISES DEALER TO STICK TO SINGLE BUSINESS

Studebaker Sales Manager Warns Against Sidelines and Speculation and Declares Them Fallacy—One Car Better than Several.

"In one of the gatherings of Studebaker dealers during my recent Western trip a man rose to ask a question," says E. R. Benson, sales manager of the Studebaker Corporation, in discussing in that big company's house organ the value of specialization as a dealer's asset. "He wanted to know what course to pursue in cases where rival dealers spread unfounded but damaging reports about various details of the Studebaker cars. He went into detail on one of these reports and, in so doing, exposed the fact that he was ignorant of gasolene motor construction and basic facts regarding the development of power.

"Several well-posted dealers were immediately on their feet, furnishing him with the facts. Then I asked him a question:

"'What is your business?'

"The reply explained the whole difficulty.

"'I am a dealer in agricultural implements,' he said. 'I handle automobiles as a side line.'

Suggested Hiring Salesmen Specialists.

"'Why don't you hire salesmen that know the business to sell automobiles exclusively?' inquired another dealer, plainly disgusted at the turn affairs had taken.

"'These experts cost big money,' answered the implement man.

"'Yes, but the profits are big, too, when someone who understands the business is running the sales,' was the prompt reply. And it was justified.

"This little argument gives an excellent illustration of the cause that underlies the failure of so many automobile dealers to reap the unqualified success which they might otherwise achieve.

"An automobile dealer must be a specialist. If he manages his automobile business, to the exclusion of other enterprises, he is certain to succeed, with normal good sense and market conditions.

"If he is forced to conduct the business by proxy, he should place in charge of it a man whom he can trust to handle it independently. The proxy then becomes, to all intents and purposes, the dealer. The plan is, however, dependent to so large a degree on the caliber of the manager that it is not uniformly successful and profitable.

"The dealer who tries to divide his time and effort between the automobile business and some other enterprise is sure to find himself gravitating toward one of the two. The other becomes a sideline, in due time. If the sideline is the automobile business, it is sure to be neglected. If the other business is neglected it becomes unprofitable and, indirectly but surely, injures the man's effectiveness in selling automobiles.

"The financial resources of an automobile dealer form an important factor in his success. Few men are financially able to carry a reserve which will enable them to fill the demands of more than one business. The automobile dealer whose money is tied up in some other business finds himself eventually in a position where he is forced to forego an opportunity to cash in on a large scale. Such an opportunity may not present itself again in several seasons.

"In a long personal acquaintance with dealers all over the country I have been amazed at the number who have from time to time impaired their financial ability by speculations in mines, real estate, orange groves and similar propositions. The automobile dealer should keep an ample reserve in negotiable securities or cash. To spread out his resources is the height of folly. The occasional success of other speculation only serves to call attention to the overwhelming majority of cases in which such speculation leads to financial loss.

"To attain the maximum success, the automobile dealer should carry his specialization still further. Besides abandoning other forms of business and speculation, he should limit his business to one line of cars, selling this to the exclusion of all other cars, regardless of price or class.

"I have known many dealers who have tried to divide their efforts between two or more lines. I have never yet known such a dealer who did not come to regard one of these lines as a success, and the other—or others—as a source of comparative failure. As a result, he pushes one line and makes money. Usually the other one shows a loss when the balance sheet is struck at the end of the year.

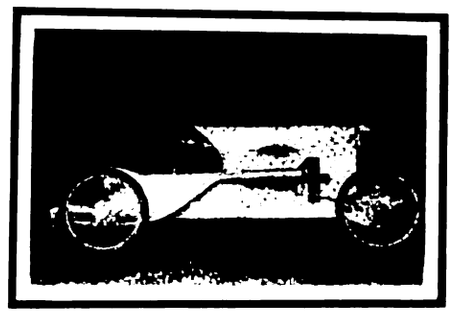
Proficiency in One Line Concentration.

"On the other hand, the dealer who centralizes his efforts, without distraction of any sort, on one line of cars, makes no reservations in the form of sales argument he sees fit to employ. He studies this line and becomes proficient in knowledge regarding it. Maintaining relations with but one manufacturer, he secures a standing with that manufacturer far in advance of that accorded the dealer who does not similarly specialize. He finds it easier to secure profitable territorial rights. Provided his choice of a line turns out to be a wise one, and the manufacturer with whom he is allied is financially sound and otherwise stable, the dealer-specialist is bound to go forward with the manufacturer, making each season increasingly profitable and building for himself a reputation which becomes locally very similar to that enjoyed nationally by the corporation whose car he sells.

"It is a mighty asset to any dealer to become known throughout his territory as the dealer for a certain type of successful automobile. The public in such a territory comes to instinctively associate this dealer's name and place of business, with any mention of the manufacturer he represents. A condition like this not only brings to the dealer's store many who might otherwise have gone elsewhere, but it also enables a dealer to reap the full advantage of whatever advertising and other sales help the manufacturer is able to give."

"Gila Monster" Proves to Be Cyclecar.

When those who attended the recent races on the beach at Galveston, Tex., saw "Gila Monster" on the program they naturally expected some big, roaring automobile to make its appearance, and they naturally were surprised when the "monster" turned out to be a very diminutive vehicle



DE WITT'S "GILA MONSTER"

—a cyclecar in fact if not in name. But despite its smallness it did creditable work, winning the 10-mile, Class E, 230-inch event in 10:07.84, under the guidance of George DeWitt, its designer, who is a former Buick racing driver, and established a record of being the first cyclecar to be entered in such a contest in America.

The car, unlike many others of the cyclecar family, uses no belt or chain drive, but receives its motive power through the front wheels, which are carried on spiral springs; the power plant is an 18-horsepower motor, developing this power at 2,800 revolutions to the minute; it is geared at 2½ to 1. DeWitt claims his car can make 85 miles an hour, but it has not yet attained this speed on the road. The tires are 29 x 2¾-inch motorcycle tires and the wheels are wire. DeWitt contemplates entering his production in other races.

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FURTHER CONSIDERATION OF ELECTRICITY AND ACETYLENE

Prest-O-Lite Man Claims Ward Leonard Officer Made Unfair Statements —Gives Additional Figures in Lighting Controversy.

To the Editor of Motor World:

I note with considerable interest the statement made by Mr. Leonard Kebler, of the Ward Leonard Electric Co., in your issue of August 7, in contradiction of my recent article which compared electric and acetylene lighting. Mr. Kebler's statement is so highly inaccurate and so thoroughly misleading that the matter should not go before your readers without further discussion.

Mr. Kebler says than an actual test on a stock dynamo, etc., shows a power consumption of about one-fifth of a horsepower. It is one thing to test a dynamo with instruments and run engineering curves with a lead pencil, and it is quite another thing to put that same dynamo in an automobile and test it on the brick speedway. Any time Mr. Kebler, or any other manufacturer of electrical equipment, wants to give the public a demonstration to show that there is no practical difference between laboratory testing and Speedway testing, we shall be more than glad to cooperate. We shall go even further, and furnish all the gasolene and all the necessary electrical and mechanical help, and shall be glad to certify to the result of the test. All we ask in return is a copy of the report of the test, certified to by the manufacturer of the electric lighting equipment. Lead pencil curves are one thing and Speedway curves are quite another thing, and the latter are much more easily understood by the public.

I am sorry that Motor World stated in its part of the article that the user of electricity pays for this convenience in gasolene, and omitted any further items of expense, and also omitted my tabulation of these items of expense. This left Mr. Kebler a chance to say that the expense for gasolene alone would not equal the cost of acetylene lighting. Mr. Kebler, of course, is aware of the fact that the gasolene consumed is only one item of the expense of electric lighting He does not see fit to mention battery expense, light globes, electrical repairs, tire wear due to increased weight, and many other well-known phases of electric lighting expense.

Mr. Kebler is also aware, or should be, that the mileage per gallon obtained on the Indianapolis Speedway, with continuous running, cannot be expected in daily service. The only important part of the Speedway tests was the percentage of difference in mileage shown by disconnecting the electric generator. The car which Mr. Kebler mentions as doing 16½ miles per gallon on the Speedway does 10 or 11 miles per gallon in daily service. Consequently Mr. Kebler's method of figuring such an owner's gasolene bill is wrong, right from the start. This, however, is an easy matter for any automobile owner to figure out without any assistance from Mr. Kebler or myself, if he knows what his annual gasolene bill is and also knows the percentage of power waste.

Mr. Kebler says that Motor World shows a deplorable lack of knowledge in publishing my statement that the discharge rate for two average headlights and one tail light is between nine and 11 amperes. He states that this figure, with 16 candlepower headlight, should be six amperes. Mr. Kebler perhaps forgets that this is a very easy matter for any automobile owner, or for Motor World or any dealer, to find out by turning on the headlights and tail lights and seeing what the ammeter on the dash registers.

It is easy for Mr. Kebler or for myself, or any other electrical engineer, to figure the ampere consumption, but there are other ways for your readers to test this matter which will be much more convincing. A local electrical supply house, which does a large business in automobile light globes, gives me the following figures: 16 candlepower Tungstens take 3 1/3 amperes each; 21-candlepower Tungstens take 4.37 amperes each; a 2-candlepower tail light takes between 1/3 and ½ ampere. Turning on the tail lights and both headlights (16 candlepower) yesterday, on an electrically-lighted car, gave an ammeter reading of slightly over 7 amperes. The same test of a car with 21-candlepower headlights yesterday gave an ammeter reading of between nine and 10 amperes. Check these figures back against my figures and those of the electrical supply house, and then check them back against Mr. Kebler's figures and see which one of us is theorizing.

Mr. Kebler is also well aware of the fact that, while a car may go out equipped with 16-candlepower headlights, the average owner soon puts in larger bulbs. This also is a statement which Motor World, or any reader, can easily verify.

While Mr. Kebler does not deny that charging rates of 14, 16 and 18 amperes are common, he states that 10 ampere charging rate is sufficient. He neglects to remind you or your readers that a large percentage of the dynamo's output is lost in the inefficiency of the storage battery. With a dynamo output of 10 amperes, and the current passing in and out of the storage battery, 7 amperes will not be delivered to the lamps, or even 6 amperes in the average system. This is a matter which is easily verified by Motor World or anyone else who wants to consult any electrical engineer, who is not connected with the manufacture or sale of electric lighting systems.

It is evident that Mr. Kebler has not consulted any of the people who were on the Indiana-Pacific tour, when he intimates that the electric-lighted did not burn their lights in the day time or if they did it with the intention of keeping the battery from being overcharged, they acted in ignorance. Mr. Kebler makes a very grave charge against the factory experts who drove the cars and the electrical experts who gave them attention on their run across the continent. I have taken the trouble to consult several occupants of electrically-lighted cars on the Indiana-Pacific tour, and found that the burning of electric lights in the day time, which was practised by nearly all the electric-lighted cars entered, was done under the advice of expert electrical service men, who found the batteries were being heavily overcharged. I can also name cars which had horn and other connections burned out, and two cars which were on fire. But if Mr. Kebler is correct and these expert service men were ignorant, it might be pertinent to ask Mr. Kebler what amount of electrical knowledge might be expected from an ordinary user of these same outfits under like circumstances.

Mr. Kebler's statement of the life of storage batteries will be highly interesting to automobile manufacturers and dealers especially. I am afraid that our investigation on this subject has been a little more thorough than Mr. Kebler's. To shorten the argument on this point, I shall be glad to furnish Motor World the name and statement of one dealer whose battery expense alone has averaged nearly 5 cents per mile for every mile he has run his car, and the name and statement of another prominent motorist whose expense in 11 months' use was over $70. I shall also be glad to furnish the name of the system, if Mr. Kebler will raise no objection to Motor World printing it.

Mr. Kebler takes one electric system mentioned in the Speedway tests, presumably one on the two light cars tested, states the weight of this system as 130 pounds, and then tries to give the impression that this is typical. Mr. Kebler is well aware of the fact that the two electrical systems on the two heavier cars shown in the Speedway tests weigh considerably more than 130 pounds, but for some reason he forgets to say so. He is also aware of the fact that the addition of weight to a car designed to carry electric lighting equipment is much greater than the weight of the electric system itself. Mr. Kebler is well aware of the

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ict that one automobile factory, which is ne of the leading exponents of electric ghting and starting, increased the horse-ower of their car over 25 per cent., and ıcreased the weight of their car over 1,000 ounds, and Mr. Kebler knows why.

Take the recent announcement of certain ıedium-priced cars which have this year een redesigned to carry electric equip-ıent, and compare the size of the motor, ze of tires, and other items with the ecifications of the 1913 model. To clear ıe matter up, however, perhaps Mr. Keb-r will be kind enough to come out and ıake a flat-footed denial of the fact that lectrical equipment has been heavily re-ponsible for the increased weight of cars earing this equipment. We shall then be lad to go into the matter more in detail.)nly, before doing so, we want to see Mr. Kebler or some other manufacturer of elec-rical equipment, make a positive statement, nstead of mere insinuations. It is the easi-st thing in the world for any man to make misstatement in one short sentence. I ım sorry that it cannot be corrected in a ıentence equally short, hence the length of his letter.

However, to borrow Mr. Kebler's own anguage, I trust you will give this letter he same prominence that you have given he statements by Mr. Kebler, and let me ıdd that any such discussion cannot help proving valuable to your readers, since it will at least point out a way by which they themselves, without the electrical experi-ence of Mr. Kebler or myself, may ascer-ain the truth.

R. H. COMBS,
The Prest-O-Lite Co.

Motor Truck Club Outing Draws Crowd.

Evidently, the fact that there are those a-plenty who frown dark frowns on "tur-key trotting" made little or no impression on members of the Motor Truck Club of New York City on Tuesday last. For a contest of the sort—in which, however, all the contenders did so well that no decision as to the best couple could be made—formed the chief diversion when the club members and the club members' wives and sweethearts repaired to the Marine and Field Club grounds, on Gravesend Bay, Bensonhurst, for their annual outing. Not all the members showed up to play or to watch the base ball game, which went for six innings, between two "scrub" nines, for there were some who preferred golf or ten-nis or handball, and a very great many took a cooling dip in the waters of the bay. But all were on hand either to see the fun or to take a hand—or a foot—in it when the ladies ran their foot races, and when dinner was served each of the 75 chairs held an occu-pant.

ELGIN IN READINESS FOR TWO DAYS OF ROAD RACING

Course Has Been Manicured Till it Shines and Dangerous Turns Have Been Eliminated—Entrants and Cars They Drive.

Elgin, which is in Illinois, and which is noted for watches and clocks and an 8¼-mile road race course, is about to have an-other speed carnival—the "fourth annual" is the proper caption. Already several of the drivers are on the scene of action, "warm-ing" up and getting used to the new banks and new turns which the road builders have provided by way of making the course safer. The affair, as was the case last year, will be run under the joint management of the Chicago Automobile Club and the Elgin Automobile Road Race Association on Friday, August 29th, and Saturday, August 30th.

Unlike last year's carnival, when five events, three of which were for small cars and two for the higher-powered racing ma-chines, were run, there will be but two con-tests to hold the interest of the specta-tors and both will go for the same distance —approximately 305 miles; and in both the cash prizes will be the same. The cur-tain-raiser will for cars with piston dis-placements of 300 cubic inches or under and will be started at 11 o'clock on the first day of the meet. Besides acquiring the Chi-cago Automobile Club trophy, which is "first time out," so to speak, never having been competed for before, the winner of this 36-lap event will receive $1,750, and if the winner should also happen to have made the fastest lap, he will be still further enriched by $200, Ira M. Cobe, of the Chicago Auto-mobile Club, having donated this sum for the driver who makes the quickest turn of the circuit. Second in will receive $500 and the third man to cross the tape half of that amount.

The Elgin National Trophy, which was won by Ralph De Palma last year, will go to the winner of the larger car event--for cars of piston displacements of under 450 cubic inches—which will be run on the sec-ond day. The cash prize amounts to $1,750. Second and third men will receive money prizes similar in amount to that offered in the smaller car event, and a $200 prize also is offered to the driver who completes the fastest lap; for the Elgin trophy race this lap prize was donated by David Beecroft, also of the Chicago Automobile Club

Since the running of last year's carnival, the surface of the course has been "mani-cured," the turns having been banked and broadened, and it is expected that even greater speed than the winner's average of 70 miles an hour, made in the longest race of last year, is to be expected. One change which is said to have increased the speed possibilities of the course enormously was the elimination of the hairpin bend at Mc-Queen's; by making this sharp turn into a long sweep the length of the circuit has been reduced some 450 yards. As it now stands, the course surveys at 8 miles 2,499 feet, so that each of the races to be run will go for 305 miles 204 feet.

While the entries have not closed as yet, nor will they close until midnight to-mor-row (Friday), up to the present time a baker's dozen of the shining lights in the racing profession have either "signed up" to start or have signified their intention of doing so. Those who are expected to com-pete in either one or the other or both of the events are: Harry Endicott, Nyberg; Gil Anderson, Stutz; Ralph De Palma, Mer-cer; Spencer Wishart, Mercer; Harry Grant, Isotta Fraschini; Joe Dawson, Marmon; Edward Rickenbacher, Mason; "Bill" Chandler, Mason; Ralph Mulford, Mason (300 class); William Haupt, Mason; Theo-dore Pilette, Mercedes; Victory Hemery, Mercedes; Ralph Mulford, Peugeot (450 class); Erwin Bergdoll, Benz.

John De Palma Stars at White Plains.

John De Palma—not Ralph this time—was the bright particular star of the race-meet that was held on the old half-mile dirt track at White Plains, N. Y., on Sat-urday last, and though he gave a pretty good imitation of his brother's method of driving—which means that he won just about as he pleased—he came very far from equaling his brother's time in any of the events; he drove a Mercer car. As was the case at the Brighton Beach meet the Sat-urday previous, Wishart, also in a Mercer, was the runner-up. One accident helped to add excitement. It occurred in the 10-mile free-for all race and put A. W. Marsh and his Stoddard-Dayton out of business for the rest of the day. The summary:

Five miles, class E—Won by John De Palma, Mercer; second, Creerberger, Flan-ders. Time, 7:24.

Five miles, class E—Won by Spencer Wishart, Mercer; second, John De Palma, Mercer. Time, 6:37.

Ten miles, free-for-all, class D—Won by John De Palma, Mercer; second, Henry Hickman, Buick. Time, 13:27⅕.

One mile, time trial—Won by Jean Men-enghetti, Fiat, time, 1:14⅕; second, Spencer Wishart, Mercer, time, 1:16⅗; third, John De Palma, Mercer, time, 1:17⅕.

Ten-mile free-for-all handicap—Won by John De Palma, Mercer (30 seconds); sec-ond, Spencer Wishart (scratch). Time, 13:11.

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1,049,333. Muffler. William H. Winslow, Chicago, Ill., assignor to The Steam Power Devices Co., Chicago, Ill., a corporation of Illinois. Filed May 15, 1909. Serial No. 496,109. (Concentric-cylinder muffler with baffles in outer chamber.) 30 claims.

1,049,442. Quickly-Detachable Tire-Holding Ring. William N. Booth, Cleveland, Ohio. Filed Dec. 5, 1910. Serial No. 595,816. (Spring locking ring for tires.) 2 claims.

1,049,452. Spring Suspension for Vehicles. John Joseph Charley, Malvern, Victoria, Australia, and Frederick Lamplough, Willesden Junction, London, England; said Lamplough assignor to said Charley. Filed March 26, 1912. Serial No. 686,443. (Spring suspension with leaf and helical springs connected by linkage.) 2 claims.

1,049,487. Starting Mechanism for Hydro-Carbon Engines. Russell Huff, Detroit, Mich., assignor, by mesne assignments, to Packard Motor Car Co., Detroit, Mich., a corporation of Michigan. Filed July 20, 1906. Serial No. 327,049. (Compression relief by shifting camshaft.) 8 claims.

1,049,497. Wheel. Joseph L. La Driere, Albuquerque, N. Mex. Filed April 1, 1912. Serial No. 687,900. (Wheel with pneumatic tire around hub.) 2 claims.

1,049,512. Shock Absorber. Thomas J. Mullen and Thomas F. Brennan, New Brighton, N. Y. Filed July 19, 1911. Serial No. 639,315. (Pneumatic cushions.) 7 claims.

1,049,531. Clutch. Sydney I. Prescott, Brooklyn, N. Y. Filed April 13, 1912. Serial No. 690,555. (Reversed cone clutch and operating mechanism.) 10 claims.

1,049,532. Clutch. Sydney I. Prescott, Brooklyn, N. Y. Filed July 5, 1912. Serial No. 707,651. (Reversed cone clutch and operating mechanism.) 7 claims.

1,049,577. Speed Changing, Reversing, and Braking Gearing. Edouard Halma, Paris, France, assignor to himself, Georges Louis Perret, and Louis Isaac Murisier, Paris, France. Filed Jan. 24, 1912. Serial No. 673,193. (Magnetic change-speed mechanism.) 5 claims.

1,049,579. Vehicle Wheel. Archer H. Harris, Youngstown, Ohio. Filed Dec. 3, 1910. Serial No. 595,442. (Block tire and carrying frames.) 2 claims.

1,049,607. Rotary Valve. George von Rottweiler, Sheboygan, Wis. Filed Dec. 11, 1911. Serial No. 665,112. (Water jacketted rotary valve above cylinders.) 16 claims.

1,049,617. Anti-Skidding Device. William H. Snyder, Ashbourne, Pa. Filed Jan. 24, 1912. Serial No. 673,071. (Crossbars and holding clamps for solid tire non-skids.) 3 claims.

1,049,628. Transmission Mechanism. Nelson A. Wheeler and Frank S. Holley, Stockton, Cal. Filed March 14, 1912. Serial No. 683,729. (Transmission gearing for agricultural tractors.) 4 claims.

1,049,635. Spring Wheel. Simon F. Zenger, Covington, Pa. Filed April 18, 1912. Serial No. 691,585. (Wheel with outer ends of spokes formed into spiral springs.) 2 claims.

1,049,637. Driving Axle. Herbert W. Alden, Detroit, Mich., assignor to the Timken-Detroit Axle Co., Detroit, Mich., a corporation of Ohio. Filed June 29, 1912. Serial No. 706,650. (Timken tapered bearing axle construction.) 6 claims.

1,049,677. Cooling Device for Pneumatic Tires. Andrew B. Craig, Tarkio, Mo. Filed Aug. 13, 1912. Serial No. 714,934. (Water-cooling system for pneumatic tires.) 6 claims.

1,049,679. Engine Starter. Charles H. Cuno, Meriden, Conn. Filed Feb. 1, 1912. Serial No. 677,971. (Distributer for fluid pressure starter.) 11 claims.

1,049,705. Carburetter. Charles R. Greuter, Saugus, Mass. Filed Dec. 26, 1908. Serial No. 469,317. (Multiple jet carburetter.) 11 claims.

1,049,815. Starting Mechanism for Internal Combustion Engines. Charles Day and George E. Windeler, Stockport, England, assignors to General Electric Co., a corporation of New York. Filed June 13, 1912. Serial No. 703,397. (Starter introducing gas under pressure to cylinders.) 5 claims.

1,049,840. Transmission Gearing. Harry W. Friedel and Harry J. Lutz, Wheeling, Va. Filed May 17, 1912. Serial No. 697,940. (Sliding gear employing two countershafts.) 8 claims.

1,049,883. Change-Speed Gearing for Motor Vehicles. William Turner Lord, Kensington, London, England. Filed June 13, 1912. Serial No. 703,499. (Friction transmission mechanism.) 4 claims.

1,049,887. Carburetter. Elmer E. Marsh, Cincinnati, Ohio, assignor of one-third to Arthur C. Davis and one-third to Victor Gluchowsky, Cincinnati, Ohio. Filed Jan. 2, 1912. Serial No. 669,013. (Carburetter with automatic control of air and fuel.) 4 claims.

1,049,893. Anti-Skidding Device for Tires. Ira Dale Meals, Harrisburg, Pa. Filed Feb. 29, 1912. Serial No. 680,580. (Jointed metal plates curved to fit tire.) 7 claims.

1,049,899. Metal Tire Protector. Joseph Morasky, Forbes, Colo. Filed Mar. 26, 1912. Serial No. 686,280. (Tire cover with spring retaining device.) 2 claims.

1,049,903. Container for Spark Plugs. Christopher Frazine Norton, Merritt, Fla., assignor of one-half to Edgar E. Grimes, Cocoa, Fla. Filed Aug. 1, 1911. Serial No. 641,798. (Tubular case of two spark plugs placed end to end.) 2 claims.

1,049,925. Internal Combustion Engine. John Sauer, New York, N. Y. Filed May 16, 1910. Serial No. 561,668. (Two-cycle three-port engine with adjustable air-valve in crankcase.) 3 claims.

1,049,937. Vehicle Tire. Alfred Steinhauser, Philadelphia, Pa. Filed Mar. 7, 1912. Serial No. 682,283. (Pneumatic tire with internal cushions.) 4 claims.

1,049,946. Combined Automobile Fender and Lamp Support. Richard Tyrell, Missoula, Mont. Filed May 28, 1912. Serial No. 700,253. (Hood covering upper half of wheel, pivoting with it in steering and carrying lamp bracket.) 1 claim.

1,049,959. Accelerator for Internal Combustion Engines. Thomas C. Willett, Adams, Tenn. Filed Oct. 18, 1911. Serial No. 655,316. (Ratchet device with releasing trigger.) 5 claims.

1,050,002. Electric Igniting Device for Explosive Engines. Edward P. Cowles, Sparta, Mich. Filed May 12, 1902. Serial No. 106,947. (Fly-wheel generator with automatic governor for increasing air gap between rotating and stationary parts as speed increases.) 7 claims.

1,050,012. Internal Combustion Engine. Charles E. Duryea, Reading, Pa., assignor to David Clark, Wm. A. La Rue and John H. Fisher, Easton, Pa. Original application filed Oct. 2, 1905, Serial No. 280,974. Divided and this application filed Mar. 22, 1907. Serial No. 363,961. (Rotary cylindrical valve.) 13 claims.

1,050,026. Starter for Combustion Engines. Carl Hunt, Indianapolis, Ind. Filed Jan. 3, 1910. Serial No. 535,963. (Ignition starter with separate fuel supply.) 10 claims.

1,050,049. Driving Gear for Motor Road Vehicles. Giovanni Agnelli, Turin, Italy, assignor, by mesne assignments, to F. I. A. T., Poughkeepsie, N. Y., a Corporation of New York. Filed Jan. 16, 1907. Serial No. 352,630. (Two-speed bevel gear rear axle drive.) 8 claims.

1,050,050. Motor Vehicle Axle. Giovanni Agnelli, Turin, Italy, assignor, by mesne assignments, to F. I. A. T., Poughkeepsie, N. Y., a Corporation of New York. Original application filed Jan. 16, 1907, Serial No. 352,630. Divided and this application filed Dec. 15, 1909. Serial No. 533,149. (Two-speed bevel gear rear axle drive.) 3 claims.

1,050,059. Carburetter. John H. Gould, Plymouth, Ill., assignor to Alfred C. Stewart, Los Angeles, Cal. Filed May 26, 1909. Serial No. 498,523. (Carburetter with gasolene passage through air-valve stem.) 6 claims.

1,050,060. Steering Mechanism. Robert E. Gregg, Indianapolis, Ind., assignor to General Specialty Company, Indianapolis, Ind., a Corporation of Indiana. Filed Jan. 2, 1912. Serial No. 669,078. (Steering axles extended beyond pivots and linked together.) 8 claims.

1,050,061. Coupling Link for Anti-Skid Chain. Edwin S. Holmes, Jr., Washington, D. C., assignor of one-half to Randolph T. Warwick, Washington, D. C. Filed Mar. 11, 1912. Serial No. 682,858. (Cross chains with hooked ends.) 3 claims.

1,050,087. Internal Combustion Engine. Karl Steinbecker, Charlottenburg, Germany, assignor to General Electric Company, a Corporation of New York. Filed Mar. 9, 1912. Serial No. 682,607. (Hydraulic valve gear.) 7 claims.

1,050,108. Lubricating System. Paul Daimler and Albert Hess, Cannstatt, Germany, assignors to The Firm of Daimler Motorengesellschaft, Stuttgart-Unterturkheim, Germany. Filed Apr. 8, 1912. Serial No. 689,317. (Port arrangement in plunger lubricating pumps.) 4 claims.

1,050,128. Vehicle Wheel. Anton Haller, Sioux City, Iowa. Filed Oct. 30, 1911. Serial No. 657,4[illegible]. (Rim with rubber tread, metal sides and internal springs.) 4 claims.

1,050,138. Means for Regulating and Lubricating a Laminated Spring. Maurice Houdaille, Paris, France, assignor to Societe Houdaille & Sabot, Paris, France. Filed July 24, 1911. Serial No. 640,287. (Adjustable wedges for separating spring leaves.) 4 claims.

1,050,146. Curtain for Automobiles. Louis J. Tahrs, Buffalo, N. Y. Filed Feb. 21, 1912. Serial No. 679,046. (Curtain between front and rear seats.) 5 claims.

1,050,162. Magneto Ignition System for Internal Combustion Engines. William F. Nickel, Brooklyn, N. Y. Filed Nov. 23, 1910. Serial No. 593,845. (Winding system designed to concentrate current output from all parts of armature at point of discharge.) 21 claims.

1,050,197. Resilient Wheel for Vehicles. Alois Zimprich, Oberndorf-Purgstall, Austria-Hungary. Filed Apr. 1, 1912. Serial No. 687,665. (Wheel with radial springs between inner and outer rims.) 1 claim.

1,050,200. Auxiliary Air Inlet Device for Internal Combustion Engines. James Madison Aubery, Los Angeles, Cal. Filed Aug. 28, 1911. Serial No. 646,534. (Auxiliary air inlet with ball valve.) 2 claims.

1,050,230. Automobile Heater. Lundy L. Peters, Tiro, Ohio, assignor to Joshua Crouse, Bucyrus, Ohio. Filed Nov. 15, 1911. Serial No. 660,354. (Foot warmer operated by exhaust gas.) 1 claim.

1,050,288. Valve-Operating Mechanism for Motor Vehicles. James W. Packard, Warren, Ohio, assignor, by mesne assignments, to Packard Motor Car Company, Detroit, Mich., a Corporation of Michigan. Original application filed June 29, 1903, Serial No. 163,589. Divided and this application filed Oct. 13, 1905. Serial No. 282,646. (Rocking lever valve mechanism.) 6 claims.

1,050,395. Combined License Bracket for Vehicles. William A. Schleicher, Cleveland, Ohio. Filed June 3, 1912. Serial No. 701,161. (Sliding bracket attached to lamp.) 1 claim.

1,050,418. Electric Ignition Device. James E. Baldwin, East Williston, N. Y., assignor, by mesne assignments, to Fulton Manufacturing Co., Erie, Pa., a Corporation of Pennsylvania. Filed Mar. 10, 1906. Serial No. 305,279. (Eccentric operated ignition system with reversing device for two-cycle gasolene motor.) 8 claims.

1,050,456. Explosive Engine. Eero W. Helin, Jamaica, N. Y., assignor of one-half to William C. Dillman, New York, N. Y. Filed Feb. 8, 1912. Serial No. 676,439. (Crankshaft and cylinders parallel and connection through bevels.) 4 claims.

1,050,461. Make-and-Break Device for Ignition Systems. Theodore Hubert, Roselle, N. J., assignor, by mesne assignments, to American Circular Loom Company, Boston, Mass., a Corporation of Maine. Filed July 6, 1910. Serial No. 570,548. (Magneto circuit-breaker.) 5 claims.

1,050,481. Resilient Wheel. Bernard Marley, Warren Preston Thacker, and Robert Parker Barnard, Nokomis, Ill. Filed May 23, 1912. Serial No. 699,252. (Wheel with crossed curved spring spokes.) 3 claims.

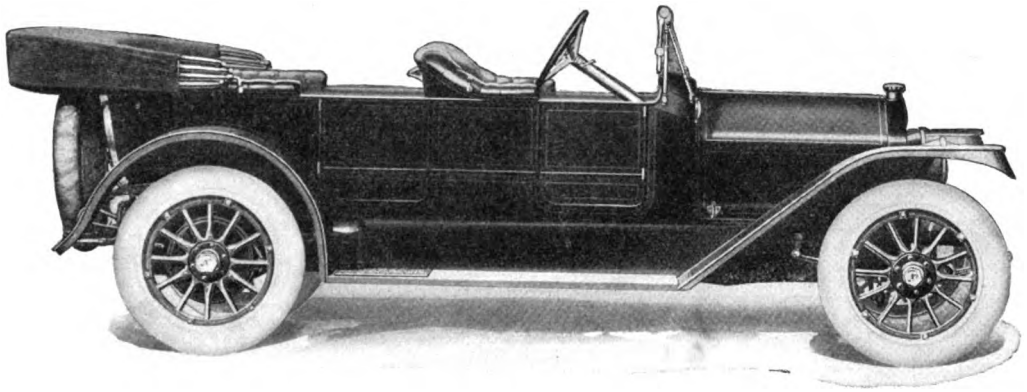
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Holds World's Stock Championship

National

Holds World's Record for Fastest 500 Miles in Competition

Once a National Dealer, Always a National Dealer



Electric started and lighted. Not only left side drive, but *access* to both front doors

Five models, $2750 to $3400

Private owners boost sales and profits for *National* dealers

Private owners have boosted the sales and profits of *National* dealers because they received ***honest value*** in their car, consequently, did not hesitate to recommend the *National* to their friends.

Once you join the great *National* Selling Organization, as a *National* dealer you will find that our advertising, *plus* your salesmanship ability, *plus* the recommendation of satisfied private owners, *plus* the ***honest value*** that is to be found in every *National* car, will help you to quick, easy, *profitable* sales. Other *National* dealers find this true—and so will you.

You know from experience that it is only when the private owner gets the honest value in his car, that the dealer who sells it makes a profit. That's why *National* dealers stick with us year in and year out and are prosperous.

No dissatisfied owners to cut down your profits

We claim and can convince the most skeptical that the *National* is the best car to own—that the *National* is the most profitable selling proposition for you as a dealer.

This is a pretty broad claim to make—but after thirteen years of consistent, successful building and selling the *National*, we offer you a car built entirely of the best materials money can buy—containing a most flexible, noiseless motor—the most efficient electric starting and lighting system—a car that is powerful, dependable, easy to operate, convenient and comfortable.

You as a *National* dealer will make a nice profit and *retain* it, because here is a car with "come-backs" reduced to the minimum—a car that keeps the owner boosting instead of dissatisfied—and this simply means that *your profit* remains *profit* and is not eaten up in needless service and shop expense.

Visit our factory—or write us at once

It will be to your interest to visit our factory at Indianapolis if you can possibly do so. If you are to be a part of the great *National* Selling Organization we would like to meet you face to face.

If not convenient to come here at this time, wire or write us quick, there is a big opportunity waiting for you if you happen to be located in open territory. Our output is steadily increasing; based on a permanent ever-increasing demand from owners.

Come to Indianapolis and visit our factory if possible, if not, write immediately for complete specifications, illustrations of our various models, prices and satisfactory offer to dealers.

Let us hear from you by return mail—your request for information will imply no obligation on your part.

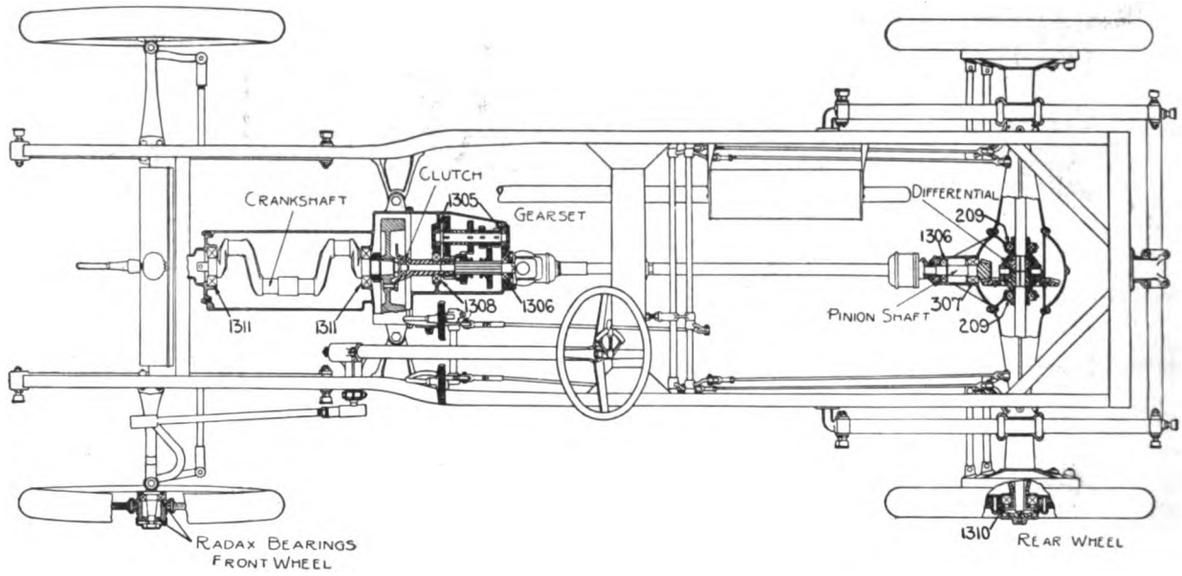
National Motor Vehicle Co., Dept. 90, Indianapolis, Ind.

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American Made For American Trade

New Departure

Ball Bearings Throughout, and Why



By the use of New Departure ball bearings throughout the entire chassis, the manufacturer of this car has reduced power losses, repairing and operating costs to a minimum.

New Departure ball bearings eliminate friction. Friction is expensive, wears away the parts, hastens depreciation, and makes frequent repair necessary.

By eliminating friction New Departure ball bearings waste so little of the motor energy that maximum driving power is transmitted to the rear wheels. By eliminating friction there is practically no wearing away of the parts. The life of the entire car is longer and repairs are fewer.

All of these advantages are secured without sacrificing bearing efficiency. New Departure ball bearings will carry the load under all conditions of service equally as well as any bearing made.

Have you seen our interesting brochure on "Friction Elimination"? If not, drop us a card today and it will be forwarded to you by return mail.

The New Departure Mfg. Co., Bristol, Conn.

Western Branch: 1016-17 Ford Building, Detroit, Mich.

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A
Continued Story—
No. 2

No. 3
Next Week

W-H-A-T-?

You don't have to get out in the mud and slush and soil your clothes—and disposition!

Well, take it from me, you'll have worse troubles than that—and a plenty of 'em before you realize the wisdom of your Uncle Dudley.

I've run that wagon a week now, and talk about Starting troubles—why, there ain't any.

I can shake that agent's mitt for putting me wise to the old reliable crank handle.

GLBA
Storage Battery

Write us for full information

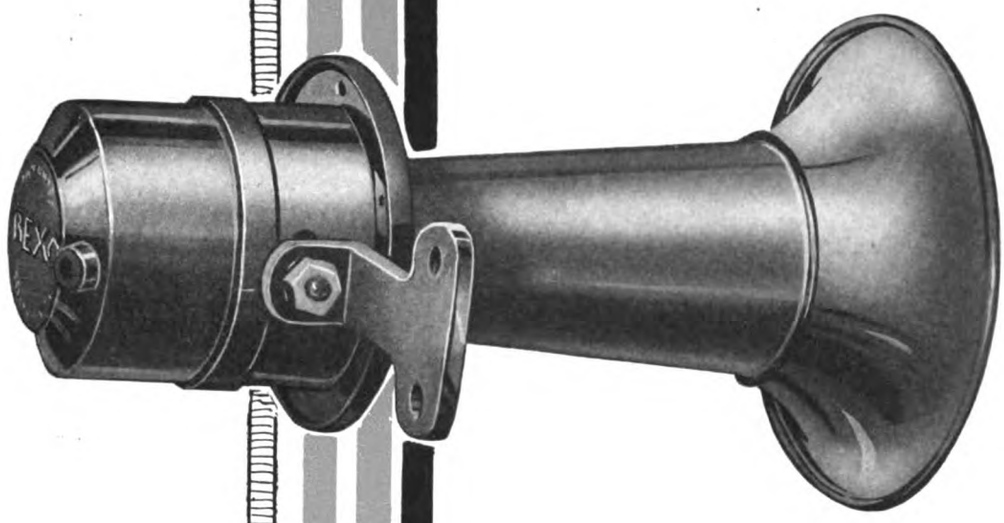
Willard Storage Battery Company, Cleveland, Ohio

New York Branch—136 West 52nd Street
Chicago Branch—2241 Michigan Avenue
San Francisco Branch—243 Monadnock Bldg.
Detroit Branch—1191 Woodward Avenue
Indianapolis Branch—438 and 439 Indiana Pythian Bldg.

Depots in All Principal Cities in the United States, Canada and Mexico

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Elyria-Dean
TRADE MARK



REXO

PRICE

$8

The Rexo is a single tone horn produced in large quantities for the automobile manufacturers—our standard equipment.

The Rexo on your car will give you a signal that satisfies all the requirements of a one note horn. May be used for city and ordinary open country work.

Built on the same sturdy lines as the Tuto and guaranteed.

No Elyria-Dean horns need oiling or cleaning, and only a possible adjustment with a screw driver once a year. Many have not removed the rear cap for three years.

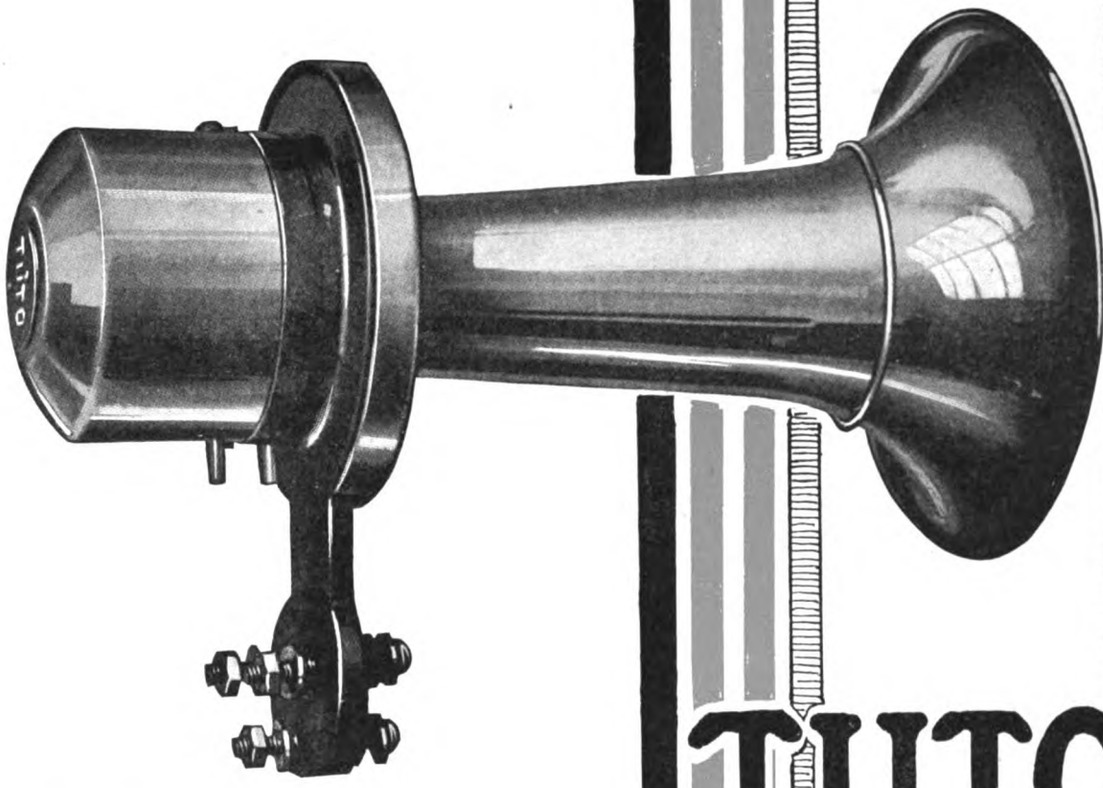
Order through your dealer or address

THE DEAN ELECTRIC COMPANY
501 Taylor St., Elyria, Ohio
Kansas City, Mo. San Francisco, Cal.

Sumter Telephone Supply Co.
SUMTER, S. C.

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Elyria-Dean
TRADE MARK



It would be very foolish for the Dean Electric Company with a competent engineering corps to continue to manufacture Hammer driven horns if there were no logical market for them.

The two-tone Tuto will supply your need for a horn which does not shriek but gives a warning to pedestrians, adequate under all conditions, but without annoyance to the occupants of the car.

Too loud a signal becomes vulgar. The low note of the Tuto suffices for ordinary signaling. You may produce the loud note by depressing the same button more deeply.

Permanent guarantee makes it the horn for fall motoring—it will outlast many winters.

Have your dealer order or write.

THE DEAN ELECTRIC COMPANY

501 Taylor St., Elyria, Ohio

Kansas City, Mo. San Francisco, Cal.

Sumter Telephone Supply Co.
SUMTER, S. C.

TUTO

(2 Tone Electric)

PRICE

$15

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60 "SIX" KISSELKAR 60 "SIX"

The Big Car that Pioneered Downward Prices Maintains Its Leadership as a Car of Unsurpassed Ability, Elegance and Comfort.

Point for point this powerful, silent, thoroughbred KisselKar 60-"Six" challenges critical comparison. Its symmetry of design, perfect poise and balance, and long, clean, graceful lines appeal irresistibly to your sense of beauty and fitness.

At first sight you feel instinctively that this big KisselKar "Six" is a car that you would be proud to own. Your first road test will disclose the exceptional riding qualities of this "greyhound of the highways." Gliding smoothly along in this superb car of comfort, you realize the utmost limit of motoring delight.

The exceptionally liberal 142-inch wheelbase, the big wheels and over-size tires, shock absorbers and eleven inches of seat upholstery reduce road vibration to the minimum. And the unusually spacious tonneau and deep pitched seats permit you to recline at ease, unaffected by the "lurches" and sidesway incident to ordinary motoring.

The lighting facilities are strikingly original, especially the illuminated instrument board and special lights that sweep the full length of the running boards, and the "bull's-eye" in the tail lamp, the rays of which directly reach the gasoline gauge. The Golde patent "one man" top, Warner speedometer, Klaxon horn and many other features of the highest priced cars are all found in the KisselKar 60-"Six" equipment.

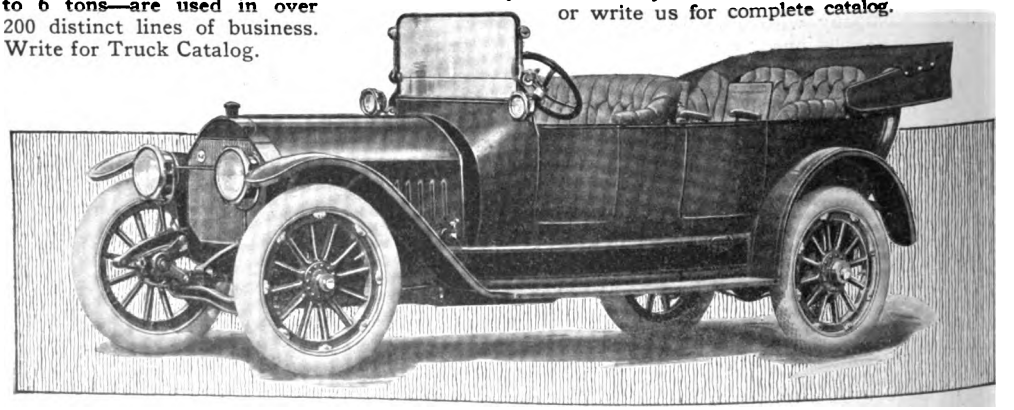
The KisselKar 60-"Six" at $3150 is a wonderful value that easily leads the "big Six" field. Price of the new KisselKar 48-"Six" is $2350; KisselKar 40-"Four," $1850. All KisselKars are fully equipped, and are electric lighted and started. They have left hand drive and center control.

KisselKar Service Contract

The KisselKar is sold under a written guarantee of service to owners—a tangible, definite and specific contract that clearly stipulates the scope of KisselKar Service and provides mechanical care that forestalls trouble and retards depreciation.

KisselKar Trucks—1500 lbs. to 6 tons—are used in over 200 distinct lines of business. Write for Truck Catalog.

These new KisselKar Models are now being shown by our representatives everywhere. See your nearest Dealer for demonstration, or write us for complete catalog.



KISSEL MOTOR CAR CO., 159 Kissel Ave., Hartford, Wis.

BOSTON NEW YORK CHICAGO MILWAUKEE KANSAS CITY MINNEAPOLIS ST. PAUL
DALLAS SAN FRANCISCO LOS ANGELES OAKLAND

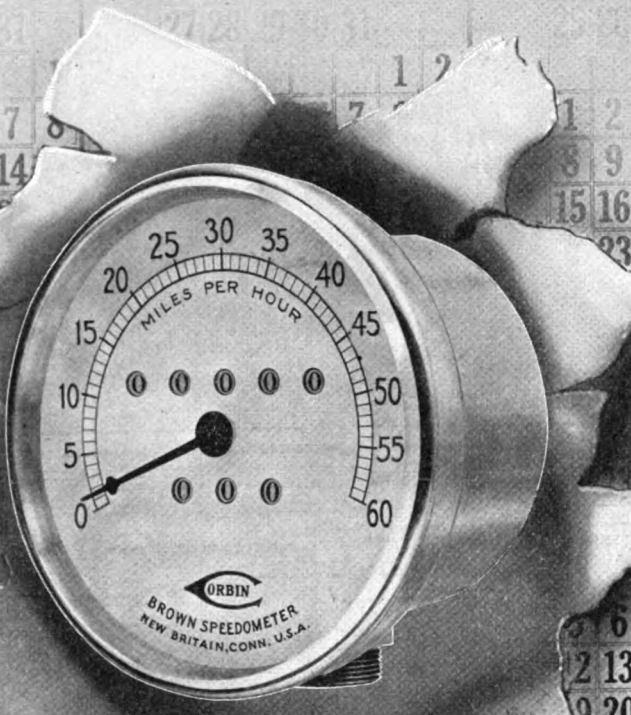
Philadelphia, Detroit, Houston, El Paso, New Orleans, Washington, Baltimore, Nashville, Duluth, Buffalo, Pittsburgh, Hartford, Conn., New Haven, Albany, Troy, Rochester, Providence, Montreal, Quebec, Toronto, Winnipeg, Calgary, and 300 other principal points throughout America.

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CORBIN-BROWN SPEEDOMETER

"The Speedometer of Absolute Accuracy"

Accurate every day in the month—
And every month in the year



For Sale By Dealers Everywhere
Write for Catalog

CORBIN SCREW CORPORATION
The American Hardware Corporation, Successor
NEW BRITAIN, CONN., U. S. A.
NEW YORK CHICAGO PHILADELPHIA

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Now Comes the Standardized Top

Here Is the Material that Makes It Possible

Look for pages and half pages in The Saturday Evening Post this fall and winter, advertising NEVERLEEK, the first standardized top covering. Guaranteed without limit—a known, standardized, dependable piece of equipment.

The Automobile Manufacturer can put it on his car with confidence. He can guarantee it because we stand back of him. It adds distinction to the appearance of his car, and adds value. It doesn't shrink—retains its shape—and does not wrinkle.

A NEVERLEEK TOP is an advantage to the Dealer for the same reason. It makes the car easier to sell; it gives a smart appearance; its guarantee is a strong selling argument—there is no danger of a comeback.

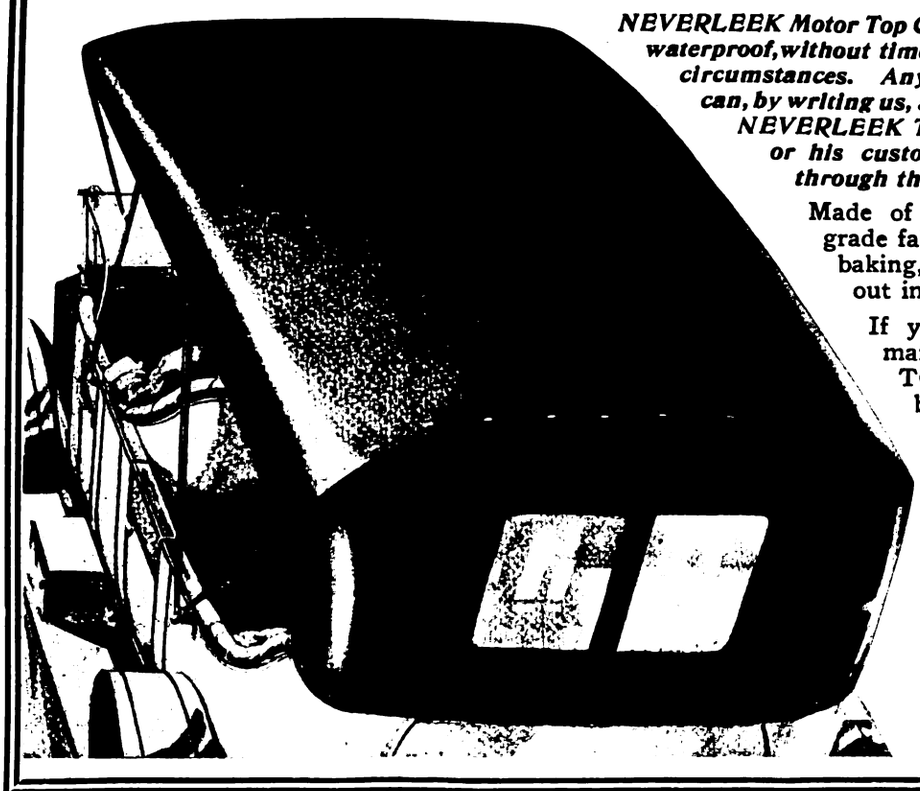
TRADE MARK

NEVERLEEK

TOP COVERING

Guaranteed Without Limit

Read This Remarkable Guarantee—The Strongest That Can Be Written:



NEVERLEEK Motor Top Covering is guaranteed absolutely waterproof, without time limit, in any climate, under all circumstances. Any automobile dealer, anywhere, can, by writing us, arrange for the recovering of any NEVERLEEK TOP, without expense to himself or his customer---provided such top leaks through the fabric.

Made of new live rubber and highest grade fabric. Tested for three years by baking, freezing and other abuse, without impairing water-proof qualities.

If you are selling cars, ask your manufacturer for NEVERLEEK TOP EQUIPMENT. If you are buying a car, insist on a NEVERLEEK top. If you have an old top, get it re-covered with NEVERLEEK.

Samples and full information from

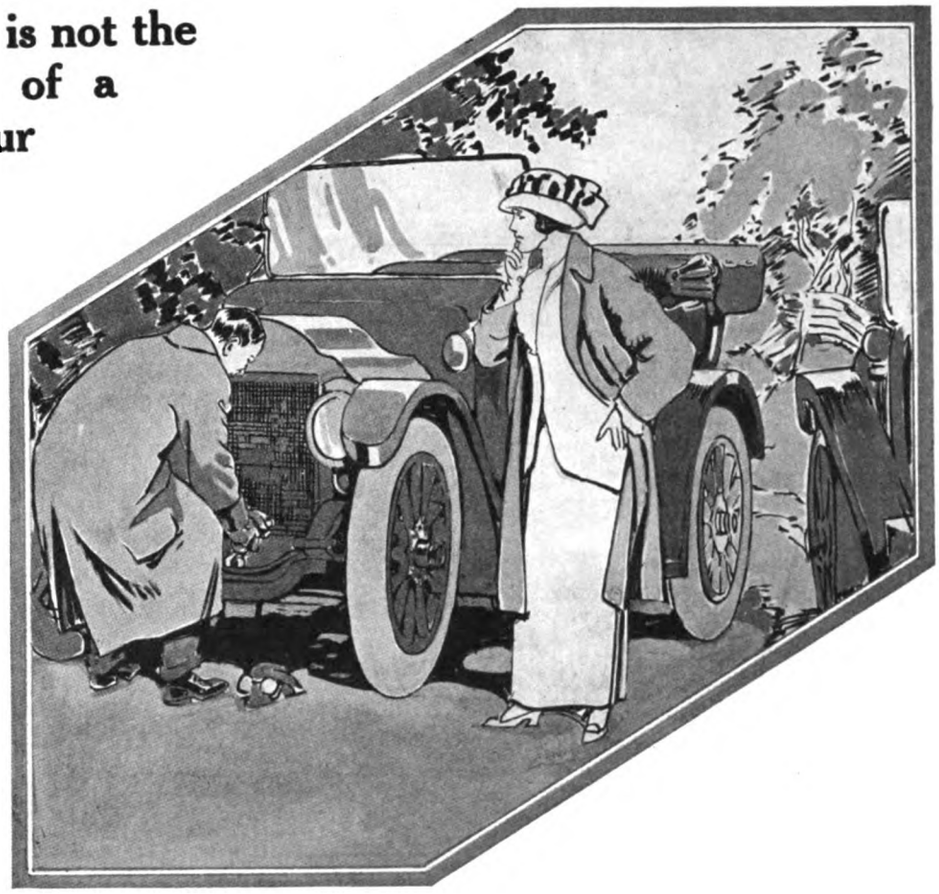
F. S. CARR CO.

Sole Manufacturers

Boston, Massachusetts

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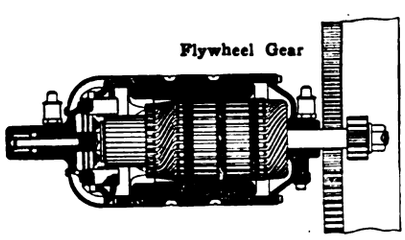
—No, this is not the beginning of a Gouverneur Morris romance.



IT is just Harvey Robinson, the genial dealer in Whirligig cars, happening to meet Miss Bessie Flutter in her 48 h.p. Whirligig trying to take a Sunday spin. The Whirligigs, you know, are fitted with Buzzer & Smashem electric starters, which can be heard two blocks away when they get busy, and which (perhaps for that reason) have become a household word in Robinson's home town.

On this particular Sunday Miss Bessie stopped her car in the shade of a grove to enjoy the view. Perhaps the placid pastoral scene affected the starter also, for when Miss Bessie remounted, pushed her starter lever and stepped on the button, the Sabbath calm was not desecrated by the usual uproar. Miss Bessie could not crank the engine by hand, so she had to wait for a masculine rescuer, who by good fortune was no other than Harvey Robinson himself.

The picture shows Harvey in the act of mentally congratulating the manufacturers of the Whirligig on their selection of a starter. Later he will congratulate himself that he, instead of his competitor across the way, was fortunate enough to happen along at this time.



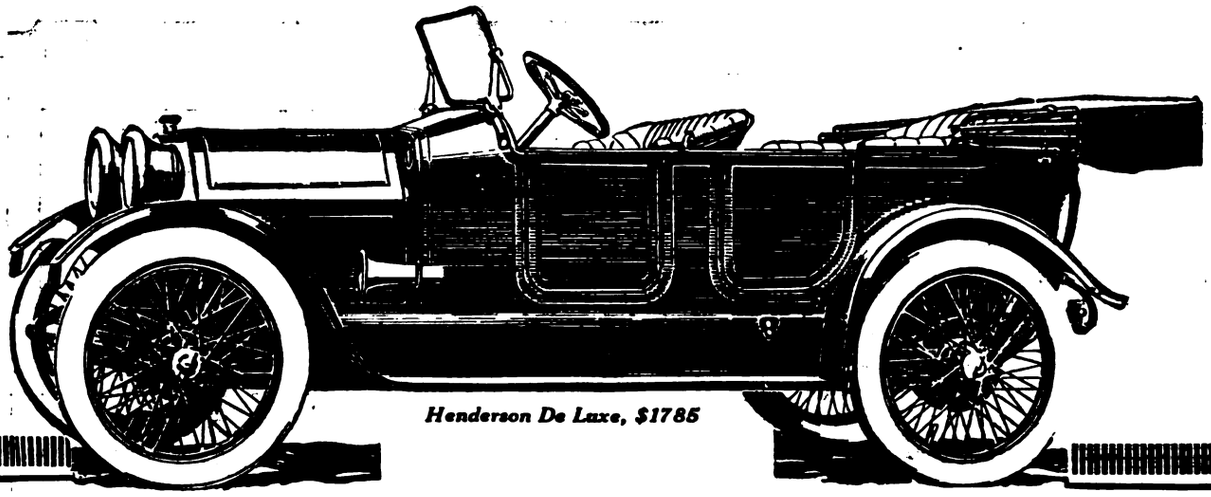
Just at present he is also framing a resolution to send for Rushmore literature and find why those Rushmore people have the nerve to claim that theirs is the real "press-the-button" starter. He will get it by return mail—and it will deal in scientific facts, not "hot air."

The RUSHMORE STARTER

Rushmore Dynamo Works, Plainfield, N. J.

LONDON PARIS BERLIN

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Henderson De Luxe, $1785

How the Largest Dealer-Profits Are Made

By C. P. Henderson



—By offering 1914 cars *NOW!*
—By actually getting *deliveries* on cars they *sell!*
—By not having unsold models of the previous season.
—By getting cars at the height of the selling season NOW.
—By not having to pay interest, insurance, storage, damage on cars crowded onto them in dull season by some makers.
—By means of scientific dealer-cooperation from the factory.
—By factory advertising assistance in copy and *CASH!*
—By selling cars without *chronic* defects that lose sales.

Dealers Who Offer 1914 Cars Now

That is the ideal dealer-manufacturer relationship. I have studied dealer conditions almost from the industry's inception.

Our dealers today can offer immediate delivery of cars embodying features that, on other leading cars, will be seen first at the New York Show, January 1914.

They can offer the use of a new fuel, if the prospect wants it—for Henderson cars are built to be fitted with the new Harroun kerosene-burning carburetor. Wire wheels are optional.

Cowl dash, cowl gasoline tank, left drive, the new center seat control, the famous Stutz rear system—all these and a myraid other striking 1914 and 1915 features win orders *today*.

And we have been delivering since May 20. So our dealers have year-ahead automobiles to offer. Under any other name dealers cannot take profits on such cars until *Spring*.

Don't Sell Old 1913 Models Now

All other moderate-priced car dealers are selling 1913 models today—a year out of date. Buyers know these things. They hold off until 1914 announcements are made. Then they rush in and find they can't get deliveries until Winter.

Some dealers have cars for city sale, none of the price the country buyer wants to pay.

Note the sales possibilities for this line: Light Four $1585, country and city trade; De Luxe Four $1785, city trade and some country business; 6-Cylinder, $2285, city trade; Coupe, on six or four chassis, large city trade.

Have You Such Prospects?

You can probably put your finger today on 20 to 100 prospective purchasers who want just such automobiles—want them NOW. And merely supplying that existant demand is the way largest *dealer-profits* are made.

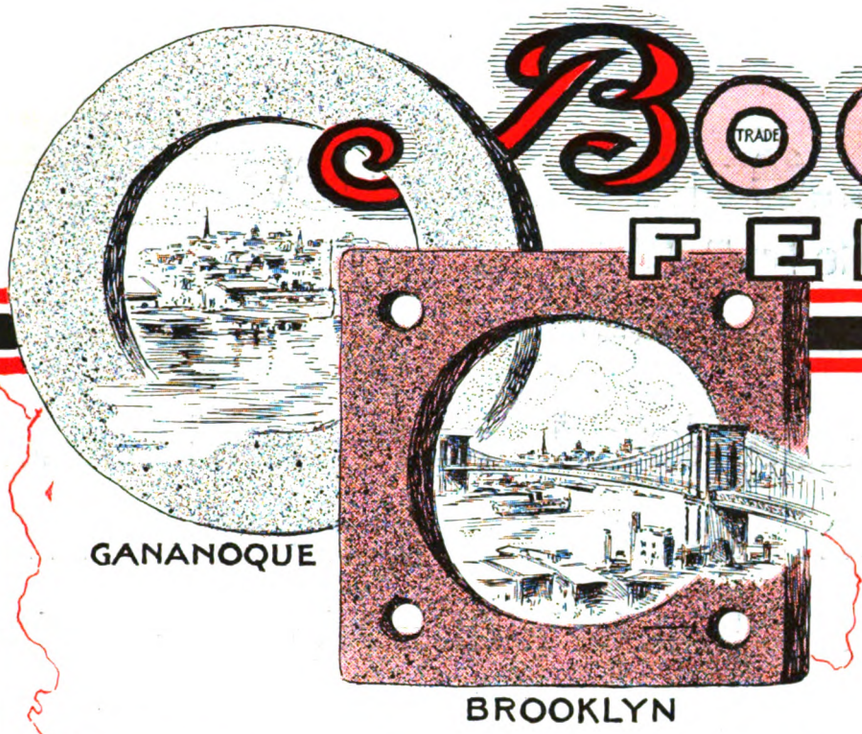
If you are the type of man we want as the dealer in your territory, you might wire about territory—or come to the factory.

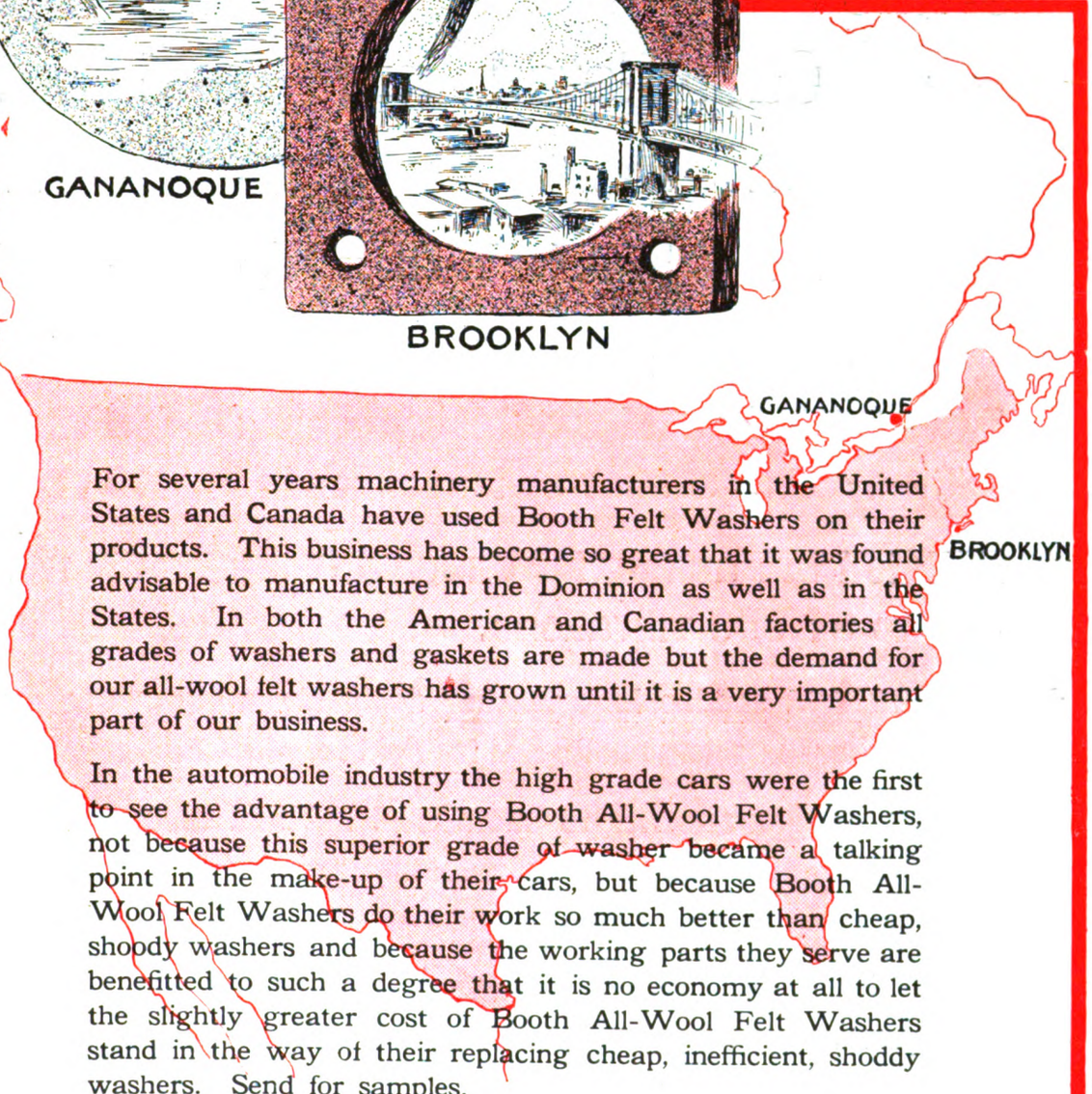
Henderson Motor Car Co., Indianapolis, Ind.

HENDERSON

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For several years machinery manufacturers in the United States and Canada have used Booth Felt Washers on their products. This business has become so great that it was found advisable to manufacture in the Dominion as well as in the States. In both the American and Canadian factories all grades of washers and gaskets are made but the demand for our all-wool felt washers has grown until it is a very important part of our business.

In the automobile industry the high grade cars were the first to see the advantage of using Booth All-Wool Felt Washers, not because this superior grade of washer became a talking point in the make-up of their cars, but because Booth All-Wool Felt Washers do their work so much better than cheap, shoddy washers and because the working parts they serve are benefitted to such a degree that it is no economy at all to let the slightly greater cost of Booth All-Wool Felt Washers stand in the way of their replacing cheap, inefficient, shoddy washers. Send for samples.

N. E. BOOTH

642-644 Pacific Street Brooklyn, N. Y.

Canadian Office and Factory
The Booth Felt Co., Ltd., Gananoque, Ontario

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The Hunt Test

Made by R. W. Hunt & Co., Chicago

Materials tested for 3/8" bolt construction:

Castellated nuts and cotters

Nut lock washers 3/16x1/16

Nut lock washers 5/32x1/8

Resulting averages:

3/8—3/16x1/16" showed looseness in 6,765 vibrations.

3/8—5/32x1/8" showed looseness in 87,200 vibrations.

Castellated nut and cotter showed looseness in from 50,000 to 87,000 vibrations.

Conclusion: Light section lock washer decidedly inferior to heavy section lock washer in holding ability and too light for efficient service.

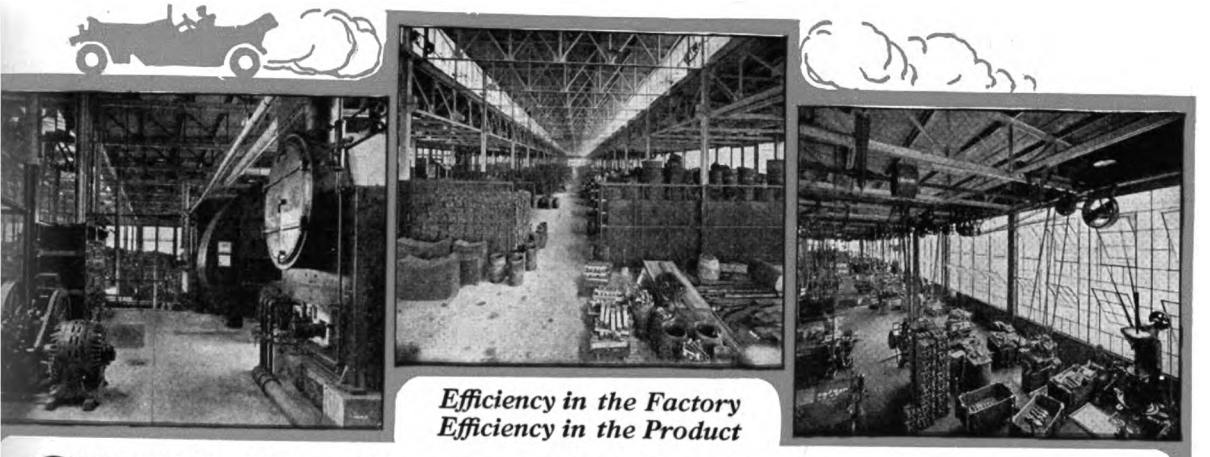
Heavy lock washer superior to castellated nut and cotter in nut holding ability and if produced under manufacturing conditions insuring uniformity of excellence is a better mechanical construction.

Full data of Hunt test was published in Motor World, May first. Copy sent on request.

THE NATIONAL LOCK WASHER COMPANY

CHICAGO, ILL.——————NEWARK, N. J.

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Efficiency in the Factory
Efficiency in the Product

GLIMPSES of the world's greatest lifting jack manufactory—a plant not surpassed in any industry for mechanical efficiency and ideal working conditions.

Duff-built jacks are recognized as the standard throughout the world—for great engineering projects, railroads, suburban and street railways and for all lighter requirements.

The same prestige that goes with our heaviest 500-ton hydraulic jacks attaches to our

GENUINE

BARRETT

AUTOMOBILE JACKS

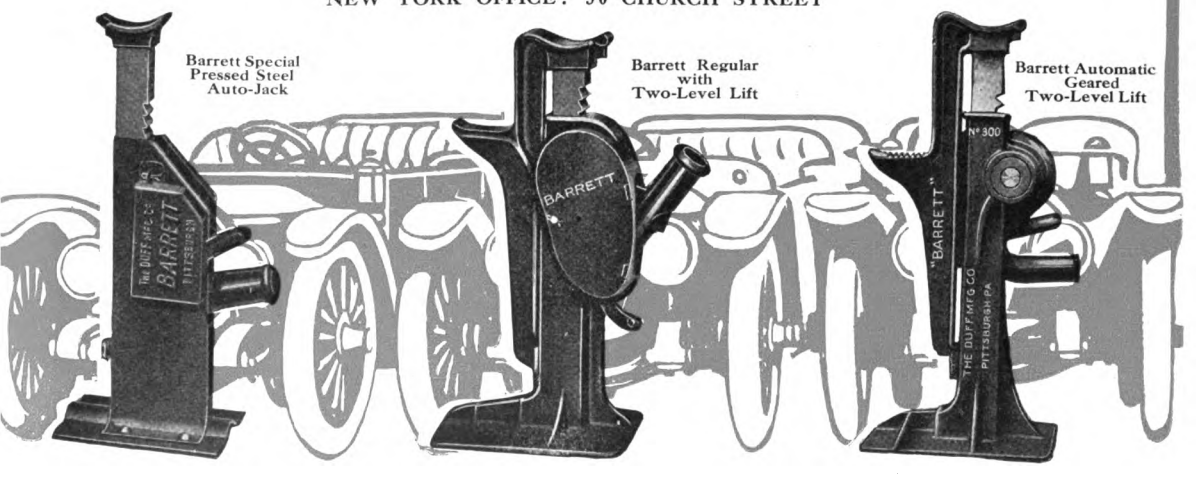
The added creditability as well as the greater efficiency and safety of Barrett Jacks makes it tenfold worth while for the manufacturer to pay the slightly higher price of making it the standard equipment of his automobile product. With automobile buyers the Barrett is a *known* quantity of *known* quality. With dealers also who appreciate the value of offering standard accessories, the sale of a jack always means the sale of a Barrett.

Write for Catalogue and supply of literature.

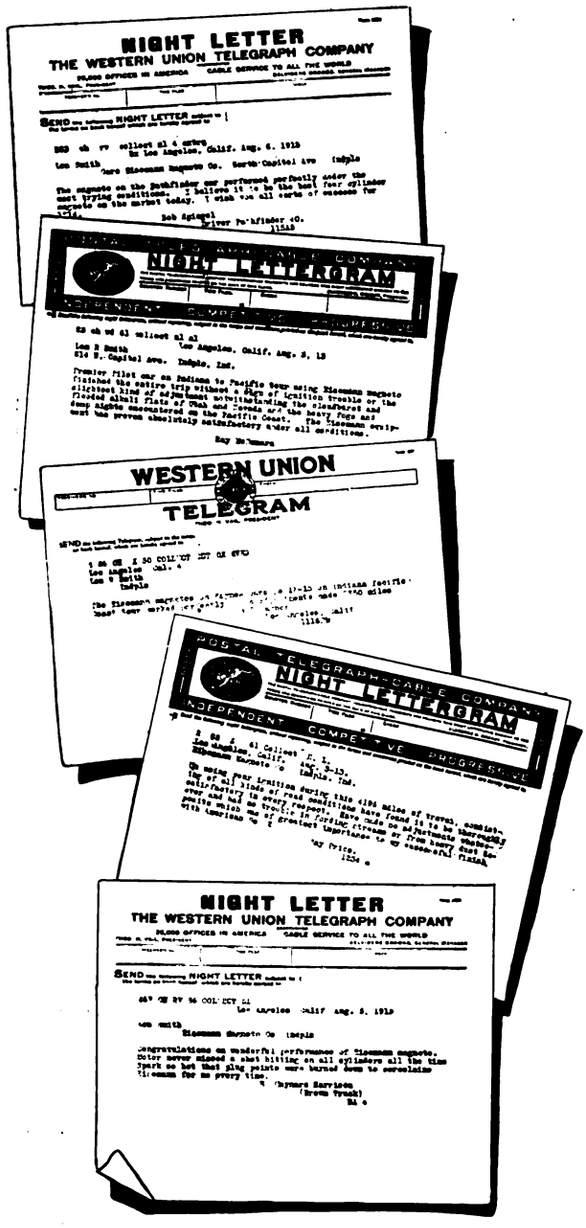
THE DUFF MANUFACTURING COMPANY, PITTSBURGH, PA.

Established 1883

NEW YORK OFFICE: 50 CHURCH STREET



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Herewith is shown a list of the cars and the type of Eisemann Ignition carried. Note that only three of these were imported outfits, the other eight being manufactured in the American factory.

Pathfinder	**4 cyl.**	**EUR and D2U coil**
Haynes	**4 cyl.**	**EMR and DC "**
Haynes	**6 cyl.**	**EMR and DC "**
Premier (2 cars)	**6 cyl.**	**EUR and D2U "**
American (2 cars)	**6 cyl.**	**EMR and DC "**
Pilot	**6 cyl.**	**EMR and DCR "**
Henderson	**6 cyl.**	**EMR and DC "**
Empire	**4 cyl.**	**EM single ignition, fixed spark**
Brown	**4 cyl. truck**	**EM single ignition, fixed spark**

If you are not using Eisemann equipment now—take good heed from this forceful demonstration and join the list of car and truck makers who no longer know what ignition troubles are—the 64 makers who depend upon Eisemann just as these eleven did.

The Eisemann Magneto Co.

Sales and General Offices
225 West 57th Street, New York City

Indianapolis, Ind.
514 N. Capitol Avenue

Detroit, Mich.
802 Woodward Avenue

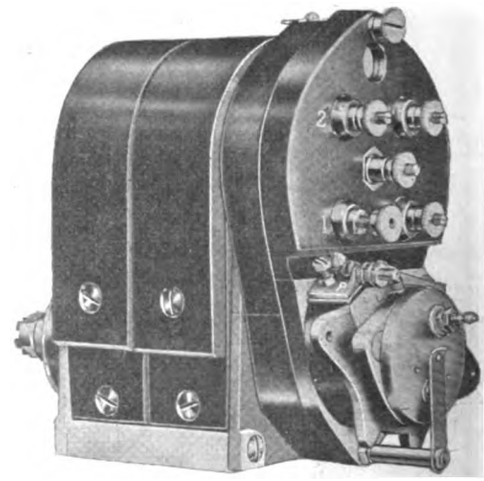
EISEMANN

Think What the Proven Eisemann Efficiency and Dependability Mean to You, Mr. Dealer and Mr. Manufacturer!

Eleven out of nineteen cars on the severe tour cross country from Indianapolis to the Pacific were Eisemann equipped. Every single equipment absolutely perfect in performance. Not one suggestion of trouble, from the time the start was made to the very end of the trip—through sand and mud, through rivers and alkali plains, through valleys and over high mountains—under the hardest sort of conditions.

Think what the use of such an efficient and dependable system on your car means after it leaves your hands and lands finally in the hands of the customer. Think what a sales asset it is to equip the product you sell with such dependable and efficient ignition.

And besides, this is merely spectacular proof of the facts that have given Eisemann the reputation it enjoys today. For years wise car makers have been using Eisemann ignition with the knowledge that it was making a better product for them and giving them a list of satisfied users. It has been the every day performance of these Eisemann equipments that inspired the eleven entrants in this tour to depend upon Eisemann in the first place. The ultimate performance really is only justification of their judgment.



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The most important miles on the dial

One of the most important speeds a car *must* maintain—and must have indicated *exactly* in order to maintain—is the low speed required by city traffic rules which is often as low as 6 miles per hour.

The *only* instrument that indicates these low speeds is the *magnetic type* speedometer.

No other Speedometer shows any sign of life until its whirling parts have enough momentum—never under seven to fourteen miles per hour.

The magnetic Stewart begins to register when the car begins to move. It accurately and unfailingly indicates speed *from zero up*. It is the only speedometer which surely indicates every mile or fraction below fourteen miles—the most important miles on the dial.

This is another reason for the 800,000 Stewart Speedometers in use compared to the 200,000 of all other makes combined.

See that you have a Stewart on *your* car.

The Stewart Speedometer Factory
1949 Diversey Boulevard Chicago, U. S. A.

Service Stations in all important cities all over the world

· The most popular · Speedometer in the World

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Hartford Cone Clutches

Quality, delivery and price are the three big factors in determining the advisability of one concern's doing business with another—after the all-important engineering features cocnerning efficiency and availability have been settled satisfactorily.

In passing, cone clutches in point of efficiency are the choice of the majority of automobile engineering experts, both for trucks and pleasure cars. Among the various makes of cone clutches, Hartford products dominate.



Standard Hartford Cone Clutch Unit Complete with Universals. This is the Type Clutch We Have Specialized in for Years.

In their relation to the general chassis assembly, Hartford Cone Clutches possess a decided advantage over other makes because of their ready interchange of parts and the ease of assembly and take-down.

In regard to quality—Hartford Cone Clutches go through a series of inspection tests beginning with the rough forgings and on through every stage of their manufacture. These inspection tests are so rigid, and the passable limits so close that an inferior piece of material or an inferior bit of workmanship rejects the unit. Close study and long experience has enabled us to define every possible clutch defect, and the inspection in vogue in our shops is in reality a series of traps which a defective clutch cannot get by.

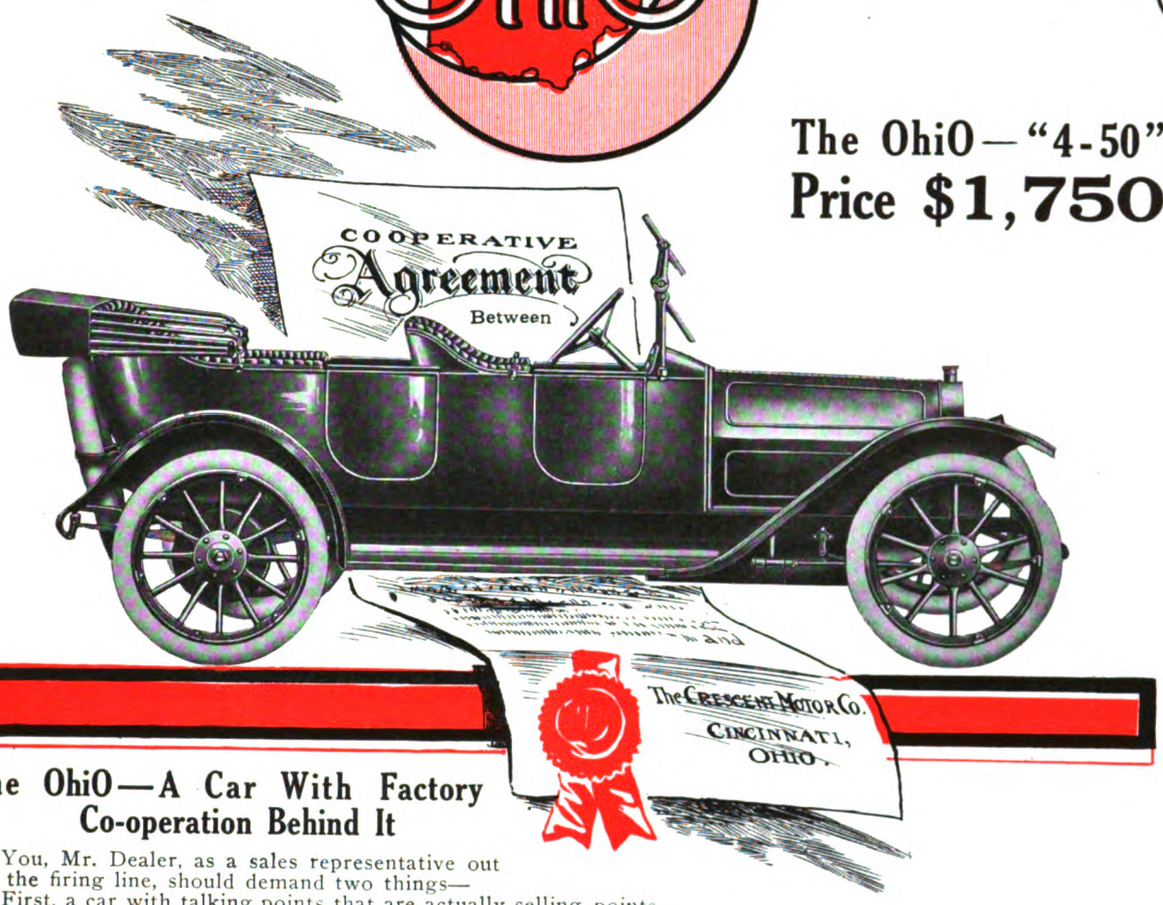
In regard to delivery and price—approximately the same condition govern each. Material costs vary slightly with the open market. Manufacturing skill is best evidenced in the selection of labor, in machining and in equipment. In the Hartford Shops only the most highly skilled machinists are employed, many of them having been with us for years, making a specialty of clutch work.

We have always made cone clutches and our equipment of special machinery challenges comparison with any. Herein lies the basic reason why we deliver Hartford Cone Clutches strictly according to schedule.

Improved machinery designed especially for a particular purpose reconciles costly skilled labor with commercially practicable quotations on Hartford Cone Clutches,

Hartford Auto Parts Company
HARTFORD, CONN.

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The OhiO—"4-50" Price $1,750

The OhiO—A Car With Factory Co-operation Behind It

You, Mr. Dealer, as a sales representative out on the firing line, should demand two things—

First, a car with talking points that are actually selling points.

Second, real factory team work.

The OhiO car as a selling proposition is all that Mr. R. E. Northway's experience in the industry, plus an efficient factory, can make it.

Its real value goes back of the paint, deeper than the engine or the transmission; it goes back to the sincerity of the men behind it.

For that reason it stays sold, and its drivers form an unpaid selling force that work for you seven days a week.

Moreover, behind the OhiO is an organization that believes that your success as an OhiO dealer is the foundation of its own permanency.

That's why we back up OhiO dealers with factory-co-operation that actually co-operates—that works with and for you.

First we built the car.

Then we built a real co-operative department to match.

Now we know that both deserve the attention of every keen motor-car merchant, and we can make it mighty interesting for a few such men, provided they respond immediately. Wire now at our expense.

Crescent Motor Company, Cincinnati, Ohio
R. E. NORTHWAY, President

SPECIFICATIONS 1914 CARS

OhiO "4-35" Five Passenger Price $1,275

Motor—4¼ x 4¾
Axles—Full floating on annular bearings.
Transmission — Three speeds and reverse.
Clutch—Multiple disc.
Inside control; right-hand drive
Speedometer—Stewart.
Rims—Demountable.
Tires—34 x 4.
Wheel Base—116 inches.

OhiO "4-50" Five Passenger Price $1,750

Motor—4½ x 5¼.
Axles—Full floating on annular bearings.
Transmission — Three speeds and reverse.
Clutch—Multiple disc.
Center control; left-hand drive.
Speedometer—Stewart.
Rims—Firestone demountable.
Tires—35 x 4½.
Wheel Base—122 inches.

OhiO "6-60" Five Passenger Price $1,985

Motor—4 x 6.
Axles—Full floating on annular bearings.
Transmission—Four speeds and reverse, direct on fourth.
Clutch—Multiple disc.
Center control; left-hand drive.
Speedometer—Warner, flush type.
Rims—Firestone demountable.
Tires—35 x 4½.
Wheel Base—122 inches.

OhiO "6-80" Seven Passenger Price $2,485

Motor—4½ x 6.
Axles—Full floating, annular bearings on rear; taper roller on front.
Transmission—Four speeds and reverse, direct on fourth.
Clutch—Multiple disc.
Center control; left-hand drive.
Speedometer—Warner, flush type.
Rims—Firestone demountable.
Tires—36 x 4½.
Wheel Base—138 inches.

DEALER COOPERATION

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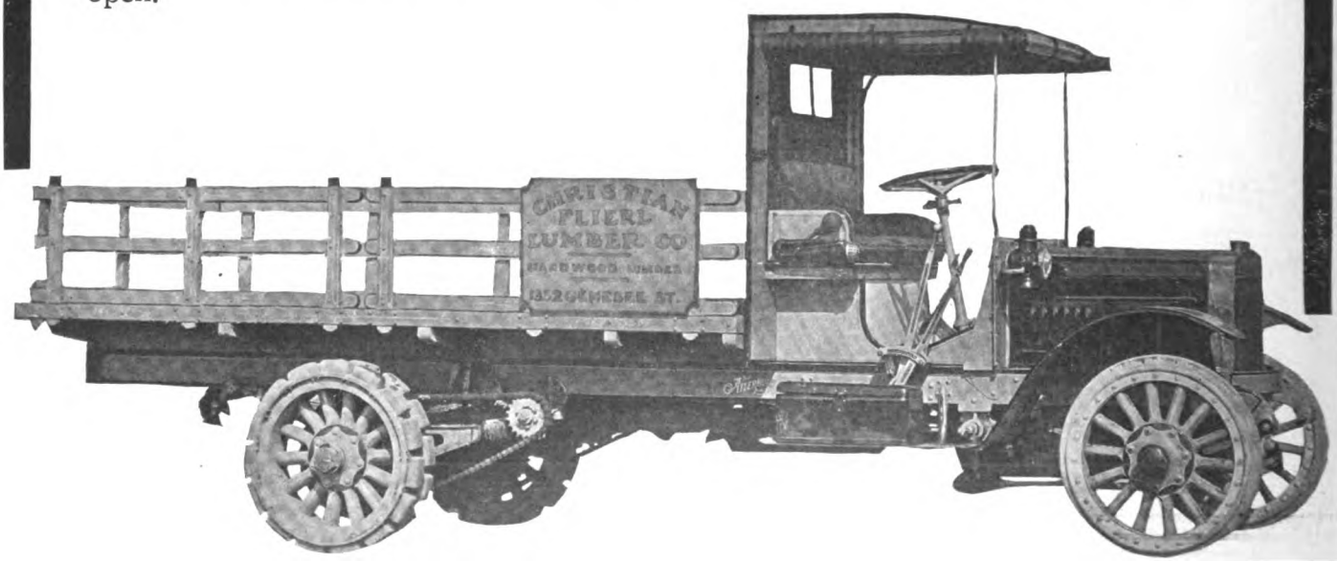
THE ATTERBURY LINE



Up in front Atterbury Trucks are as nearly perfect as can be. Atterbury motors, in themselves, are efficient and economical, making every bit of fuel used account for work done. The method of motor suspension and hitch-up with the drive mechanism is faultless. Perfection in such details means efficiency.

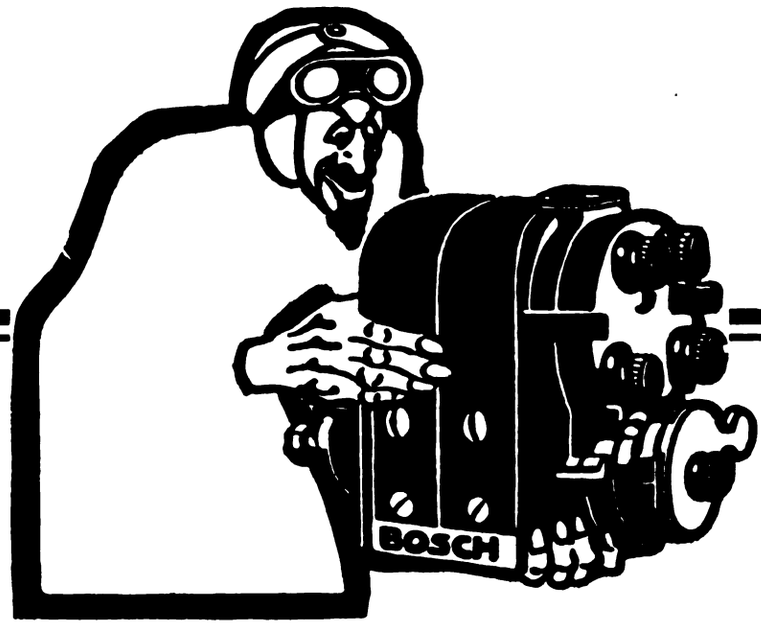
Truck efficiency without long life, however, defeats the purpose of automatic transportation. A truck must do more than accomplish more work in a day than horses. It must outlast a team of horses because its first cost is greater. This is the reason why the Atterbury Motor Car Co., early in its existence, directed much of its attention and energy to the development of a radius rod construction far in advance of anything of like nature yet produced. The strongest truck construction would never stand up unless the jars and jolts of uneven roadways were compensated by a device to relieve the operating mechanism of road shocks. No matter how well sprung, heavy loads over uneven roadways will rack the strongest truck chassis to pieces unless it be equipped with an efficient radius rod construction.

Atterbury radius rods are the highest development of this all-important, life-giving detail of truck construction, and every dealer, actual or prospective, should give this matter the most serious attention. We solicit your investigation and will welcome correspondence with you regarding terms to dealers and territory now open.



The Atterbury Motor Car Company, Buffalo, N. Y.

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Again Bosch Wins

The Santa Monica Race Again Proves the Superiority of Bosch Magnétos

1 Stutz . Cooper . Bosch
2 Mercer . Oldfield . Bosch
3 Mercer . Nikrent . Bosch

All Cars Finishing Used Bosch—Of Course

THE list of Bosch Victories is still growing wonderfully both in importance and size, exemplifying that you will have every confidence of obtaining efficient, reliable ignition whenever you specify Bosch—most important: you get all the desired factors in the most simple of ignition systems.

Literature gladly sent on request

BOSCH MAGNETO CO., 224 W. 46th St., New York
CHICAGO :: DETROIT :: SAN FRANCISCO :: TORONTO

Address Bosch Distributors at: Portland, Me.; Boston, Buffalo, Rochester, Philadelphia, Pittsburgh, Baltimore, Richmond, Va.; Memphis, Toledo. Milwaukee, Minneapolis, Des Moines, Omaha, Kansas City, Mo.; St. Louis, Denver, Seattle, Portland, Ore.; Los Angeles. Other service stations in the important centers of United States and Canada.

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More Than 150,000 New Automobiles Will Be Equipped With Stanweld Rims This Coming Season ! ! !

Cars ranging in price from $750 to $7,500.

Cars ranging in weight from 1,000 pounds to 10,000 pounds.

Cars ranging in speed from 20 miles per hour to 90 miles per hour.

Cars ranging in type from the electric runabout to the expensive gasoline limousine.

Cars selling in New York City and Calcutta, India.

Cars that will never leave the boulevards, and cars that will seldom see a paved roadbed.

Cars equipped with solid tires, semi-solid tires, straight-side pneumatic and clincher tires.

Such are the requirements that every Stanweld rim is built to satisfy. And the proof of satisfaction is the present-day demand for them.

Stanweld rims accept either straight-side or clincher tires.

They have both the quick-detachable and demountable features—operating independently.

Stanweld rims have no unnecessary loose parts.

They require no special tools to operate.

They will not rattle, squeak or grind.

They are constructed of finest materials, and built by expert workmen.

They are made by America's pioneer rim-makers.

Stanweld rims are used as standard equipment on many of the best makes of cars.

A little booklet soon will be off the press. It explains the care and operation of Stanweld Rims and contains other information of value to car-owners. Write for a copy. It's free and we'll be glad to send it.



The leading makes of pneumatic tires are guaranteed only when applied to rims bearing one or the other of the accompanying inspection marks. You will find these marks on Stanweld Rims.



THE STANDARD WELDING COMPANY

Pioneers and World's Largest Producers of Motor-Driven Vehicle Rims

Main Offices and Factory, CLEVELAND

Branch Offices in

NEW YORK
U. S. Express Bldg.

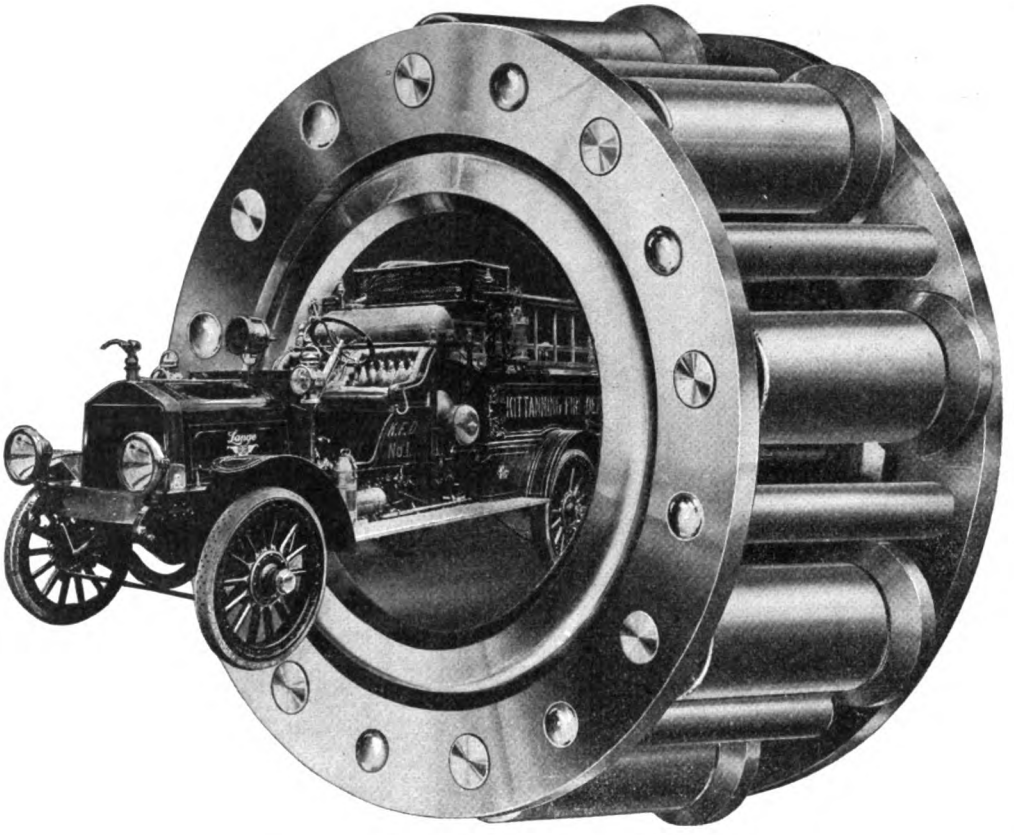
CHICAGO
Peoples' Gas Bldg.

DETROIT
Ford Bldg.

Distributors in Principal Cities of the United States

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"BOWER SAVES POWER"



Through Bower Bearings
With the Least Loss of Power

The real power of any automobile is the net amount available after friction has taken its toll. Bower Roller Bearings, because of their original design, carry the heaviest loads with the slightest loss of power. It is for this reason and also because Bower Roller Bearings never need adjustment, that they are used in so many of America's best known motor cars.

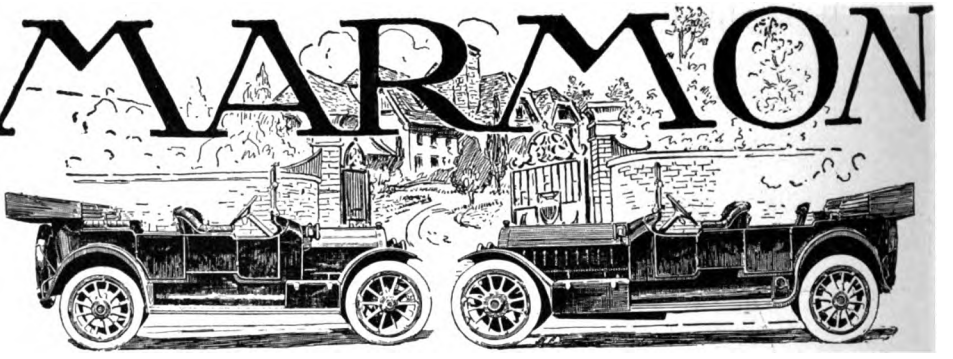
BOWER ROLLER BEARING COMPANY

DETROIT, MICHIGAN

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"The Easiest Riding Car In The World"

MARMON



The Marmon "Thirty-Two"

Price, $3,000. Four-cylinder, 32-40 h. p., 120-inch wheel base, body types and equipment to meet every requirement. A rational, logical car for touring and city use. Years of satisfactory service have proved its economy in tires, fuel and upkeep—plus smooth, delightful operation and durability.

The Marmon "Forty-Eight"

Price, $5,000. Six-cylinder, 48-80 h. p., 145-inch wheel base with short turning ability eliminating the old objections to long wheel base. Body types and equipment to meet every requirement. The only big car with small car advantages. Wonderful riding qualities and surpassing power and flexibility. A car developed by years of exacting tests.

What the Dealers Said:

A few weeks ago we announced the Marmon cars for the coming season, and at the same time celebrated the sixty-second anniversary of this firm in the manufacturing business.

A number of dealers wrote us letters of congratulation on the remarkable records of the institution, of its product, and its business methods.

A big, vital message to everyone interested in buying or selling cars is contained in these letters.

Read these expressions. They give you an actual insight into what the Marmon policy means to you.

1. "The writer has told several dealers that when a Marmon car is sold he does not have to go back every week to resell it to the customer, or talk him into believing that he is satisfied with his car. You can ask any person, I believe, in the United States about a Marmon car, whether he is interested in the automobile business or not, and he will tell you that the Marmon is a good car."
2. "I have never yet heard a knock or complaint from our owners or from our competitors in regard to the quality of a Marmon car or the responsibility of Nordyke & Marmon Company."
3. "The quiet elegance and excellence of design and construction of the Marmon cars have helped us to land the orders, and the backing we have received from Nordyke & Marmon Company by way of prompt and generous service has made it possible for us to retain our customers year after year."
4. "If every automobile dealer that you should wish to do business with could know you as we do, you could eliminate the expenses of retaining your salesmen."
5. "We have today approximately 110 Marmon cars and we take care of them with a comparatively small shop force. We can show a letter of recommendation for the Marmon car from almost every one of our owners. In all our dealings with your Company, we wish to state that there has been the utmost fairness, and we do not believe an agent could sign up for a better car or with a better factory."
6. "We are proud of the Marmon account for many reasons. One is because we know it is your policy to build just as good an automobile as is possible to be built irrespective of cost. Another is, invariably when talking to the other dealers or ordinary laymen they will at once concede that it is one of the best machines built."
7. "During the time we have represented you here we do not believe that we have heard one derogatory remark about the Marmon."
8. "We have delivered in this vicinity since we have represented you, almost two hundred Marmons. We are proud to say that not one of these customers has ever quit the Marmon after starting with us. We have not a large sales force working out of our store here. We at the same time feel that every one of these customers is in a way a salesman for us, as we know that there is not one of them that is not willing and trying at all times to further the Marmon interests."
9. "We find that our shop expenses and guarantee work amounts to practically nothing. You will appreciate this when I tell you that we have only two mechanics in our shop to take care of 200 cars."

Consider these points. They have a meaning for you.
Write for the letters and other proofs.
To the Dealer—the Marmon is better to sell because—
To the Buyer—the Marmon is better to own.

Nordyke & Marmon Company

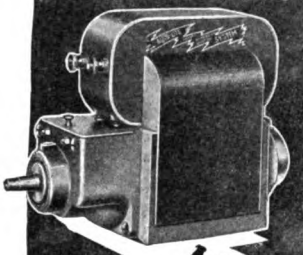
Indianapolis (Established 1857) **Indiana**

"Sixty Years of Successful Manufacturing"

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"AS SURE AS THE WHIRL OF THE WORLD"

THE BIRTH OF A BETTER LIGHT



Built with magneto dimensions - designed to be connected direct to magneto or pump shaft - operates at 6 volts - begins to generate at 200 revolutions per minute - attains maximum output at car speed of 17½ miles per hour.

AUTO-LITE ELECTRIC STARTING and LIGHTING SYSTEM

The AUTO-LITE Electric Generator - a simple, positive, convenient source of current for motor car electric lighting.

THE Auto-Lite Electric Generator—a simple, positive, convenient source of current for motor car electric lighting.

Built with magneto dimensions—designed to be connected direct to the magneto or pump shaft—operates at 6 volts—begins to generate at 200 revolutions per minute—attains its maximum output at car speed or 17½ miles per hour.

Your 1914 car should carry the Auto-Lite system as standard equipment—no matter what price you pay.

Due to its already wide-spread adoption, car manufacturers can equip with the Auto-Lite if you so specify.

For the manufacturer who desires lighting, starting and ignition in one system or separate units, we are able to provide the best recognized equipment now in use.

The Electric Auto-Lite Company
116 Michigan Street, Toledo, Ohio
BRANCHES: New York, Detroit, Kansas City, San Francisco

Get This Book

Send for our "Handbook on the Care and Operation of Automobile Electric Systems," a book so full of interesting information on all modern electric systems that no automobile owner can afford to be without it.

Explains in detail, functions of the various parts—how to locate and remedy troubles of all kinds—embraces all electrical automobile systems.

The large operation chart which it contains is alone worth the price.

Regular price 50c.

Will be sent to you for 10c. in stamps if you use this coupon.

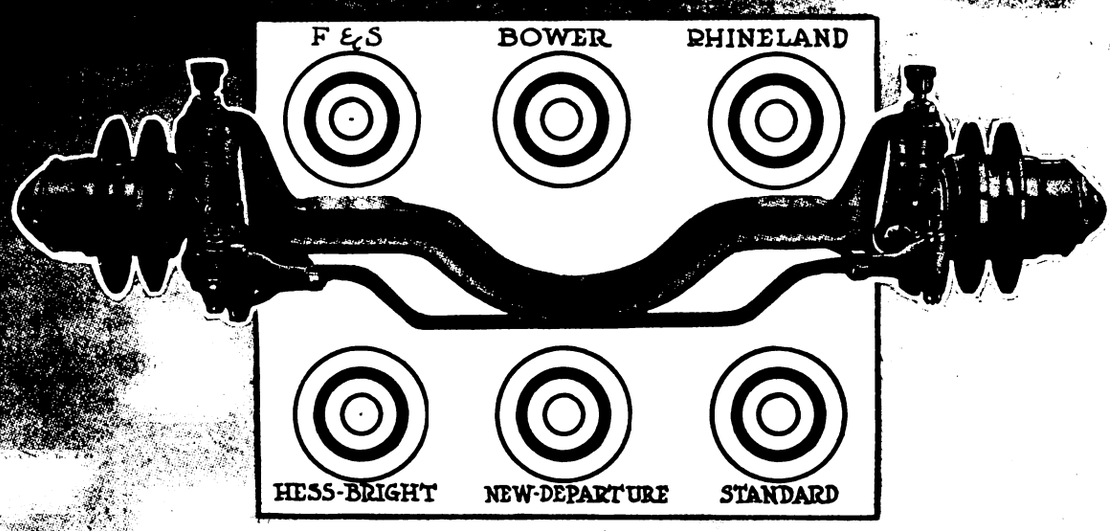
THIS COUPON SAVES YOU 40c.

The Electric Auto-Lite Co., 116 Michigan Street, Toledo, Ohio.
Enclosed find 10c. in stamps for which please send me your handbook.

Name.....

Address.....

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The AXLE WITH your CHOICE of the FINEST BEARINGS

For years Sheldon Truck axles have been the undisputed leaders in the field. But we realized that to attain supremacy is one thing; to maintain it is another.

Every Sheldon Axle which leaves our factory is of unvarying perfection.

We are continually striving to improve and perfect wherever it is possible to do so.

In line with this policy we offer to you the choice of the following leading bearings—the best and finest produced in the world:

Standard Taper Roller Bearings	**Fafnir**
Bower Straight Roller Bearings	**S. R. O.**
New Departure	**R. B. F.**
Rhineland	**Schafer**
Hess-Bright	**Norma Roller**
F & S	**R. I. V.**
S. K. F.	

Single row in any type desired.

We leave the manufacture of bearings to the specialist and make the axles as well as infinite care and unlimited experience can make them.

SHELDON AXLE COMPANY

WILKES-BARRE, PA.

Chicago Office: 68 E. 12th St.
San Francisco Office: 444 Market St.
Detroit Office: 1215 Woodward Ave.

123H

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"American" Axles

Combine the Most Efficient Worm Gears Known, with Full Floating Axles of the Highest Grade

THE LANCHESTER-DAIMLER Worm Drive in a Full Floating "American" Axle, creates a unit whose exceptional merit is frankly recognized.

Motor car engineers have not given the Lanchester-Daimler first place among worm gears without sound reasons. They regard it as superior to all others in design, and pronounce it a triumph of manufacturing skill.

That it is—in practice as well as theory—the most efficient type of worm gear known, has been proved by numberless tests.

Since we acquired—nearly two years ago—sole rights as Americn Axle manufacturers to its use, we have demonstrated its perfect adaptability to both gasoline and electric pleasure cars of the finest type.

"American" Lanchester-Daimler Axles, as a part of our regular product, show the same fidelity to the highest manufacturing ideals that is so evident in our Bevel Drive Axles.

They are fitted throughout with the best types of foreign made ball bearings.

Quality---not price—is the sole test of all materials employed in "American" Axles of either type.

THE AMERICAN BALL-BEARING COMPANY, Cleveland, Ohio

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Cost Per Sale Is Going To Be Very, Very Small For Haynes Dealers This Year

HAYNES dealers can smile when others complain about the high cost of selling. Cost per sale is cutting pretty deep into the profits of many dealers. That, and the petty repairs and adjustments bring the yearly balance close to the no-profit line.

The Electric Gear Shift

is sending crowds of auto buyers to our dealers, each ready to sign his name on the dotted line for a

HAYNES

America's First Car

The electric gear shift is, without doubt, the biggest of all improvements in automobile equipment. Contrast the awkward, noisy yanking of the gear lever with the pushing of a button, the pressing of the clutch pedal, and an instantaneous, noiseless shifting of the gears by electricity.

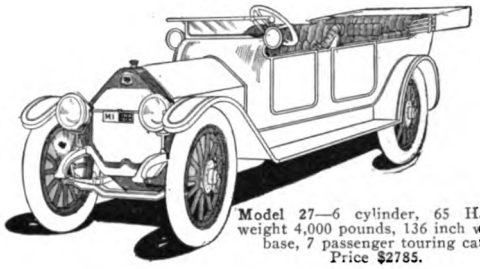
The Haynes driver never has to take his hands from the wheel or his eyes from the road. Makes driving more simple, safe, easy and enjoyable.

This wonderful electric gear shift, plus everything else in up-to-date automobile equipment is fairly coining money for Haynes dealers.



Model 27—6 cylinder, 65 H. P., weight 4,000 pounds, 136 inch wheel base, 6 or 7 passenger limousine. Price $3850.

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Model 27—6 cylinder, 65 H. P., weight 4,000 pounds, 136 inch wheel base, 7 passenger touring car. Price $2785.

Every mail brings us a deluge of letters asking for full particulars about the Haynes with the Electric Gear Shift.

Our dealers write us that every day is a rush day—that their salesrooms are the first place that automobile prospects seek. Instead of running their heads off to get orders, sales are coming easy. Many prospects have practically decided upon the Haynes before they see it, desiring only to see the Electric Gear Shift work before ordering.

For the prospect to see the Vulcan Electric Gear Shift put through its paces is a sure order-getter. It works like a charm, with almost no noise, and quick as a wink. If you haven't seen it, don't miss the first chance.

HAYNES SPECIFICATIONS

	A. L. A. M.	Dynamometer.
Horse Power— Models 26 and 27,	43.35	65
Model 28,	28.00	48

Motor—4¼ inch bore, 5½ inch stroke. L-Head Haynes design, cylinders cast in pairs. Enclosed valves.

Cooling—Centrifugal pump and pressed steel fan.

Wheelbase—Model 26, 130 inches; Model 27, 136; Model 28, 118.

Weight—Model 26, 3,800 lbs.; Model 27, 4,000 lbs.; Model 28, 3,400 lbs.

Carburetor—Stromberg.

Ignition—American Simms magneto, with patent pole shoe, producing hot spark at full retard. Perfect synchronism, greater horse power and more perfect running motor.

Lubrication—Splash and gravity feed to main bearings and idle gear; also constant feed to oil basins in lower base.

Control—Left-hand drive, **Vulcan electric gear shift**, dispensing with hand lever and enabling driver to shift gears electrically.

Transmission—Selective type, three speeds forward, one reverse. Timken roller bearings.

Steering Column—Worm and worm gear. Timken bearings.

Clutch—Haynes contracting steel band. Adjustable with single set screw. Applies power gradually.

Rear Axle—Timken full floating on Models 26 and 27, McCue design on 28 with Gurney bearings.

Front Axle—I-beam, single piece, O. H. steel heat treated. 1½ inch spindles of chrome nickel.

Wheels—Artillery type with Funk demountable rims.

Tires—Models 26 and 27, 36 x 4½ inches; Model 28, 34 x 4 inches.

Springs—Front, semi-elliptic, 39½ inches long, 2 inches wide; rear, 48 inches long, 2 inches wide.

Brakes—Diameter, 15½ external and 15 internal on Models 26 and 27; 12 and 16 on Model 28, both internal.

Finish—Body Indiana dark blue or Pacific Tour gray (optional), with black gear and wheels.

Gasoline Feed—Pressure Feed. Storage tank holds 20 gallons of gasoline, at rear of car where easily filled.

Upholstery—Models 26 and 27 hand buffed leather; Model 28 machine buffed cushions.

Starting and Lighting—Leece-Neville electrical system. A separate unit system embracing a generator for charging battery and motor for cranking engine. 100% efficient under all conditions.

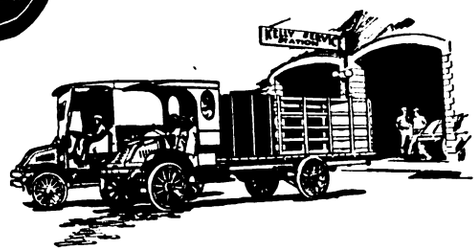
Cowl-board Equipment—Electric lights, sight oil feed, automatic cut-out for lights, dash light, auxiliary air pressure pump with gauge. Models 26 and 27 have rim wind clock and Warner autometer. Model 28, Stewart speedometer.

Other Standard Equipment—Top, top cover of silk mohair, mechanical tire pump, rain vision ventilating wind shield, two large electric headlights, electric side lights, electric tail light, electric starter, generator, 80 ampere hour storage battery, horn, coat and foot rails, tire irons, full tool equipment, one extra demountable rim, Collins curtains. Models 26 and 28 have Truffault-Hartford shock absorbers.

The Haynes Automobile Company

1 Main Street **Kokomo, Indiana**

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An Invincible Combination

Kelly Trucks
Backed by
Kelly Service

This is the greatest combination in the motor truck field.

Kelly Trucks are built just right.

Their design is the result of seven years of uninterrupted observation of the natural evolution of the successful commercial car.

They are the last word in motor trucks.

That's why Kelly Trucks will do your hauling *just a little better.*

Kelly Service insures 100% truck efficiency. Our interest in a truck does not stop with its sale.

You are interested! Write us!

Dealers!

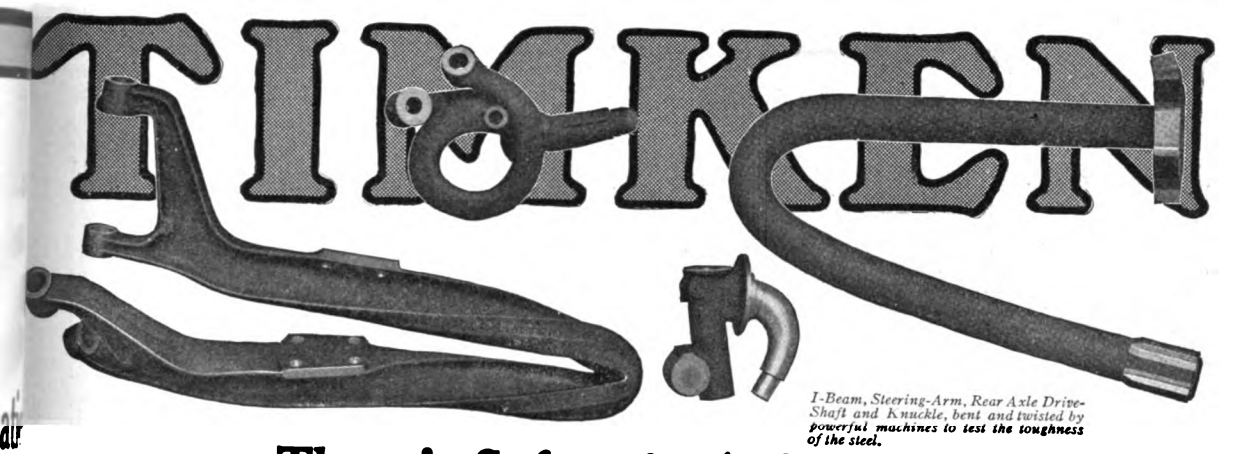
There is still some desirable Kelly territory open. Write us for our agency proposition.

The Kelly-Springfield Motor Truck Company

1037 Burt Street Springfield, Ohio

(54)

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I-Beam, Steering-Arm, Rear Axle Drive-Shaft and Knuckle, bent and twisted by powerful machines to test the toughness of the steel.

There's Safety in Axles that Stand Tests Like This—

—Safety in axles designed to meet the maximum stresses of every-day travel with a *big margin to spare*—built of materials so good that, if accident does bring strains beyond what the axles should bear, they will *stand right up to the last ounce of pressure and the last severe shock*—then *bend* but not break.

WHEN Harry Knight drove his racer head-on into a concrete wall at the Speedway May 30, 1911, to save another man's life, the Timken Front Axle was bent by the intense inpact. But that axle was afterward straightened and is running under a car today.

It is because Timken-Detroit Axle parts are so tough that they *can* be bent, twisted and flattened, cold, *without breaking*, that the man who rides on Timkens *can confidently count on riding safely.*

It requires terrific blows and tons of pressure, in special testing-machines, to bend these big, tough, cold, steel I-beams, steering arms, knuckles and driving shafts.

Tests like this are necessary to *prove* in our factory that the work of the steel-makers, the chemists, engineers and metallurgists was right.

To prove that, while wonderfully tough and strong, Timken-Detroit Axles *are not brittle.*

That the I-beams and spindles will not break under the weight of the loaded car as it drops suddenly into a deep rut or bumps over steel rails. Nor will a steering-arm, or a steering cross-rod snap, and leave the car unmanageable.

Problems in Safety

To get steel that is strong enough, and hard enough to stand the steady stress; and yet so tough that it cannot break under sudden shock, has been no simple problem. And to get it without undue weight has been another problem.

These problems could not be solved through knowledge of the chemistry of steel alone. It meant testing samples of steels from all over the world, observing and recording the effect on these steels of heating them to different temperatures and quenching them in different baths.

Concentrated Study

Out of the multiplicity of analyses, heat-treatments and testings, and out of long experience in every type of car under all conditions of service, has come the best steel for each axle part, and the best formulas for heat-treatment of each part.

Only concentrated devotion to the one problem of axle-building could determine the right steel and the right heat-treatment—just as it has developed the right design, size and relation of the different axle parts.

And Still More Study

Although Timken-Detroit Axles justified themselves from the very beginning of the automobile industry by satisfactory service in motor-cars, pleasure and commercial, the work of study, experiment and investigation has continued through all the years that have followed. It has made, and is making every year, new contributions to the wonderful things accomplished in this Twentieth Century by heat-treatment.

The safety and satisfaction of the man who rides on Timken-Detroit Axles are secure because back of the axle is the great human organization that has worked together for one common object during all the years of motor-car manufacture.

There are no more important parts of your car than the axles and their bearings. Why this is so is told in the Timken Primers, T-5 "On the Anatomy of Automobile Axles," and T-6 "On the Care and Character of Bearings." Sent free postpaid, from either address below.

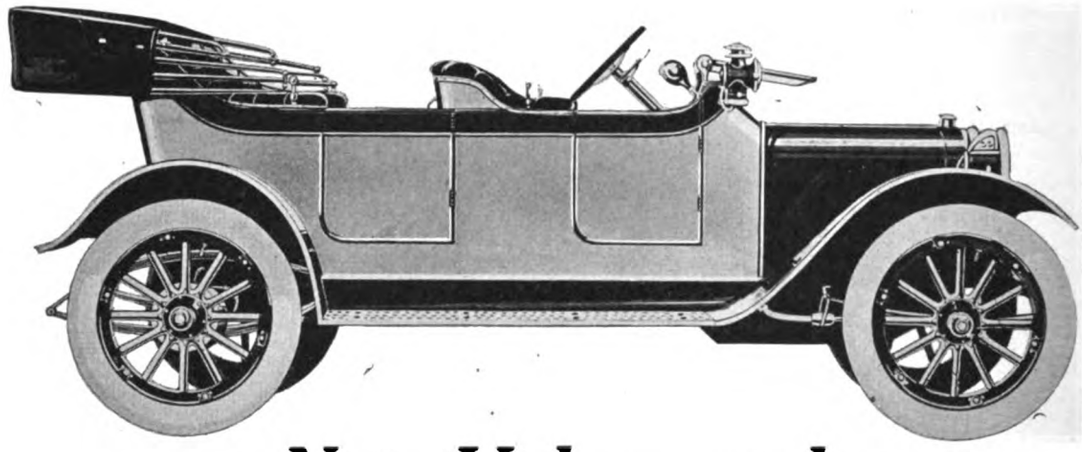


THE TIMKEN-DETROIT AXLE CO.
Detroit, Mich.
THE TIMKEN ROLLER BEARING CO.
Canton, Ohio

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RCH Complete $900

F. o. b. Detroit



Net Value and Backbone Count

THE R-C-H is not a car sold by one or two special features Abundant power and ample reserve strength; a perfectly balanced and sound chassis; a stunning English body design finished in that fashionable and striking Russian green combine to make the R-C-H *the biggest kind of a seller.*

As for stamina the second R-C-H ever built recently completed a punishing Transcontinental trip. Previous to this it had been driven continuously for two years over every conceivable kind of a western road and trail.

Such a test calls for *backbone.*

Daily we receive letters from every corner of the globe—from owners in 45 civilized countries. Some tell enthusiastically of how little it cost to run an R-C-H; some tell boastfully of R-C-H hill climbing ability while others write to tell how MUCH MORE THEY GOT FOR THEIR MONEY than their neighbors who bought elsewhere.

Again we repeat: R-C-H comfort, service and style sells at $1200 under any other nameplate.

By taking on the R-C-H a live, wideawake dealer can baffle, dominate and overwhelm competition in his territory. Wire us to-day.

R-C-H Reasons:

Left Hand Drive---Center Control---Long Stroke Motor---Big Roomy English Bodies---Stewart Speedometer---Handsome Russian Green Body Finish---Full Set Big Electric Lamps or Prest-O-Lite System---Bosch Magneto---Jiffy Curtains---110-Inch Wheelbase.

R-C-H Corporation

704 Lycaste Street Detroit, Michigan, U. S. A.

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SPRINGFIELD
CONVERTIBLE BODIES

Springfield Convertible Bodies are the embodiment of refinement in the matter of lines, material, finish and ease of adjustment.

The runabout convertible body shown here illustrates one extreme of a line that goes on up to the highest grade limousine, landaulet and town car.

Even this faithful reproduction cannot approximate the beauty and convenience of the equipments as they actually appear. They must be seen to be fully appreciated.

The ease of operation is remarkable; the tops are rapidly raised into position, the doors are opened, the hinged glass swung up into position, the remaining windows are removed from a box in the back of the front seat and buttoned into position, completely enclosing the car in less time than an ordinary top can be erected and the curtains adjusted.

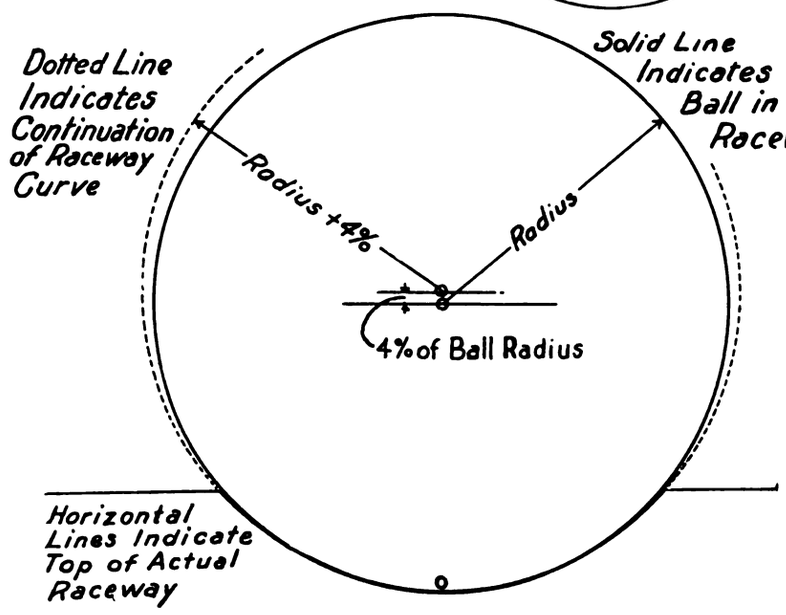
Write for brochure of reproduced photographs.

SPRINGFIELD METAL BODY CO.
Springfield, Mass.



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CAPACITY
GURNEY
ENDURANCE

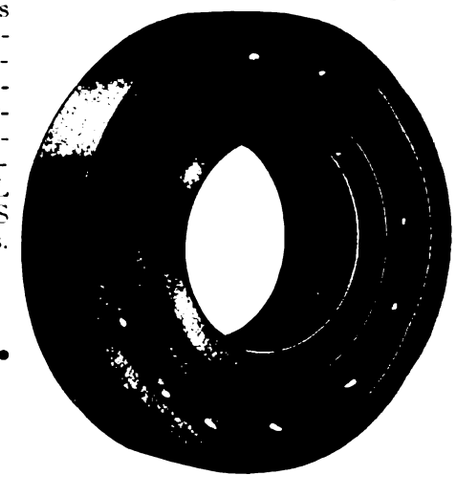


AN examination of this simple diagram will reveal something of the true Inwardness of a Gurney Raceway. The circle represents a ball. The larger curve shows the profile, or contour, of a raceway—extended to make it plainer. It is of 4% greater radius than the ball. It is in contact with the ball circle at the point O, which represents the bottom of raceway. This diagram shows how closely the raceway conforms to the ball.

THIS illustration enables one to appreciate a little better how vital a part are the raceways in a ball bearing. It is apparent how delicate is the forming of the raceways, how slight a divergence from the true race curve will seriously affect the efficiency of the raceway. If, for instance, the race arc instead of being of 4 per cent. greater radius than the ball is, say, of 12 per cent. greater radius, which is about the curvature generally found, the ball and raceway will safely bear only about one-third as much load. Or, worse and equally common, if the race curvature is not a true arc, the efficiency is very greatly impaired.

A glance at the above diagram will make plain how very slight a divergence from the true arc will destroy race efficiency. In the erratic raceway some parts of the surface will bear less than their due share of the load and other parts must bear more. In the true raceway no stresses ever exceed or even approach the elastic limit of the steel and the bearing does its work with ease and safety. In the irregular groove the ridges are easily loaded beyond the limit and accordingly soon break down.

This is the explanation of most ball bearing breakdowns. It also explains why we place so much emphasis on race contour. In the raceway ground and lapped to the truearc, and having this closest permissible approach to the contour of the ball, the balls lie in an easy bed and roll under the heaviest loads with a safety painfully lacking in bearings of ordinary manufacture. It is this exactness and refinement of race make-up that accounts in large measure for the unequaled **Capacity** and **Endurance** that distinguish GURNEY BALL BEARINGS from all others.



Gurney Ball Bearing Co.

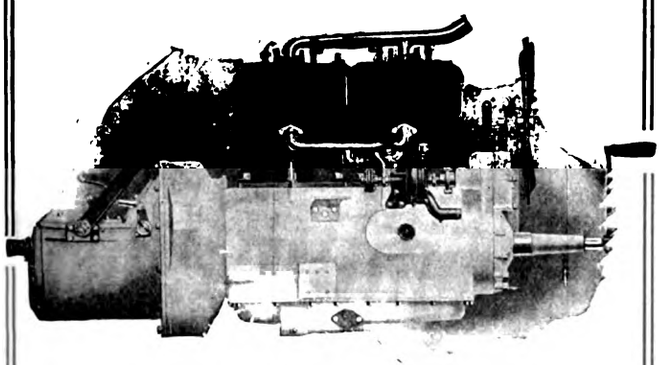
Jamestown, New York

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THE positive force feed-splash oiling system employed on Ergon Motors is one of the most efficient and simple yet devised. Ergon Motors have oil-tight and dirt-proof crank cases, yet as an added precaution a strainer is provided at the oil pump intake so as to eliminate all possibility of faulty circulation.

The degree of perfection to which Ergon oiling has been developed insures a long lived, clean and sweet running motor at all times. We solicit correspondence and investigation by car and truck manufacturers.



Immediate delivery guaranteed on standard Ergon Motors, of either the independent or unit plant type.

HAZARD MOTOR MANUFACTURING CO.
Rochester, New York

"Soot-Proof" Spark Plugs Never Balk

Over 2,000,000 Prove it

Not all spark plugs will carbonize. Not all get dirty, grow weak or short-circuit. And not all spark plugs call for frequent replacement. Your customers, Mr. Dealer, want the plug which has all spark-plug advantages and which eliminates all spark-plug faults. Mr. C. A. Mezger—after twelve years spent on spark plug problems—has perfected and patented the Soot Proof Plug. This plug is warranted to clean itself. It never clogs, never leaks, never short-circuits. It lasts for years. It is built with a double chamber and offers at least three times the resistance of any other spark plug made. And it will outlast any other by two or three times over. This has been proven by over two millions in use. One "Soot-Proof" plug will prove this to you. Try it in connection with any other plug and note the results. In a word, "Soot-Proof" Plugs forever wipe out spark plug troubles.

If you are not already handling "Soot-Proof" Plugs, it will pay you to do so. Hundreds of thousands of drivers are using them now and know their worth. Others, who have had trouble with sparking are bound to go to some "Soot-Proof" user for spark plug advice, so the demand for "Soot-Proof" plugs is growing. Get in on the popular demand—it means more and more satisfactory sales for you.

"C. A. Mezger 'Soot-Proof' Spark Plugs"



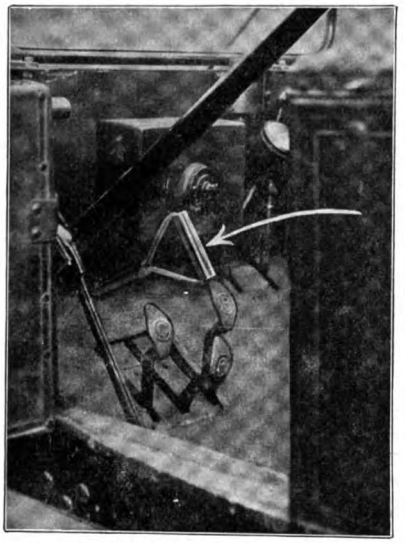
C. A. MEZGER, Inc.

15 Canal Place
New York

Philadelphia, 1427-33 Vine St., Petry-Cassidy, Inc.
Chicago, 1430 Michigan Boulevard, F. E. Sparks.
Detroit, Ford Building, H. E. Butcher.
Portland, 329 Ankeny St., Hughson & Merton.
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STOP!---SAVE MONEY



$9.00--FORD ENGINE STARTER--$9.00

"It is out of sight," under the hood. All that shows is a small hand lever on dash. You do not have to leave your seat to start your FORD MOTOR when equipped with same.

All that is necessary is to pull the lever. Will POSITIVELY TURN YOUR MOTOR OVER EVERY TIME. With this starter YOU HAVE TWO STARTING DEVICES. YOU DO NOT HAVE TO REMOVE THE CRANK. **IT STAYS ON.**

FOR THE NEXT 60 DAYS TO THOROUGHLY INTRODUCE OUR STARTER WE WILL MAKE THE ABOVE PRICE.

NO MORE BROKEN ARMS. BACK KICKS ARE DANGEROUS.

DIRECT ON RECEIPT OF PRICE.



$9.00---ORDER TODAY---$9.00

Bremer-Wilson Manufacturing Co.
1421 Michigan Ave., Chicago, Ill.



One or two good concerns, rather particular about the CLUTCH

because they know it is the daily, hourly, continuous **point of contact** between driver and car—— will find it mighty profitable to get in immediate touch with KONIGSLOW — CLEVELAND.

Clutches
Clutch Rocker Shafts
Control Levers
Universal Joints

KONIGSLOW CLEVELAND

Clutch Specialists—At Your Service

Our business is CLUTCHES and the assembly which is considered with them. Long experience with this line has won for us the title "Clutch Specialists." We invite you to make use of this experience.

Don't wait till you are ready to place orders—get in touch with us now. Delays are dangerous. Quick action wins.

THE OTTO KONIGSLOW MFG. COMPANY
Cleveland

Detroit Office: J. H. Gould, 1202 Majestic Bldg.

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Packard CABLE

The Dealer

who handles Packard Cable makes satisfied customers and sells them other automobile goods because Packard Cable always makes good.

The two heavy layers of fabric impregnated with a series of flexible enamels, resist heat, oil and water for years.

Thousands of automobiles will have to be rewired this year. Get in a stock of Cable and meet the demand. Write for our liberal proposition to dealers and latest price list.

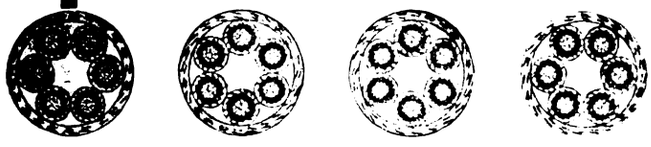
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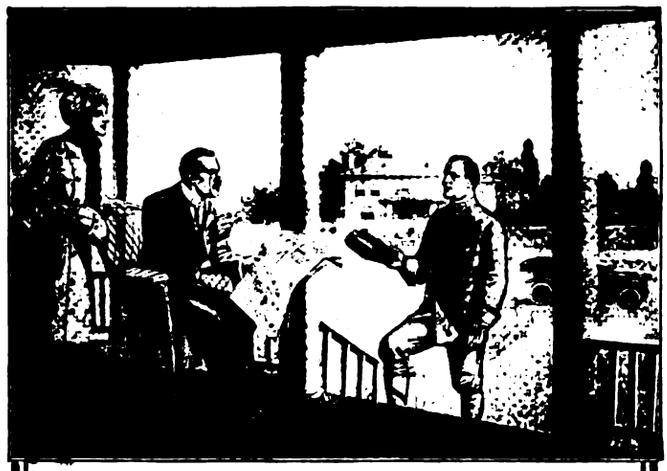
to any dealer or garage man who writes for it on his own stationery. It's a 16 x 20, six color reproduction of the oil painting of the Packard Girl by Liebsher.



The Packard Electric Co.

Dept. D (60) Warren, Ohio





Get Weed Tire Chains at Once!

"I know you are a careful driver, but it is best to adopt every device to *prevent* accidents.

"I can't afford to take *any chances.* We have all foolishly depended on rubber alone long enough. It's time to awake to our responsibility. So go at once and buy a complete equipment of *Weed Chains* and never start out without them when the roads or pavements are slippery or greasy."

Weed Anti-Skid Chains

Insure Against Anxious Moments



Probably no other device has done so much to raise the factor of automobile safety as WEED CHAINS. They are the proverbial "ounce of prevention" against skidding, the cause of over ninety per cent of all automobile accidents—*Life Insurance* and *Accident Insurance Companies* strongly endorse them and recommend their use. ***Taxicab Companies,*** for their own protection, ***insist*** that their drivers put them on when the streets are wet or slippery.

Increasing Demand

for WEED CHAINS makes them the ***most profitable*** Automobile Accessory handled by Dealers—Quick and Steady Sales—No Dull Seasons—No Dead Stock—Easily Handled—Liberal Profits—Universal Satisfaction.

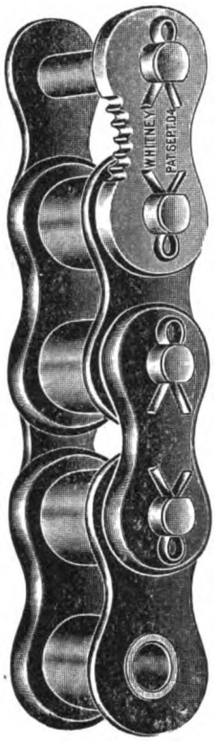
Attractive, convincing, decorative, lithographed hangers supplied to dealers upon request.

At all dealers selling Auto Supplies

Weed Chain Tire Grip Co.
New York

Manufactured in Canada by
Dominion Chain Co., Limited
Head Office: Shaughnessy Bldg., Montreal, Can.

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"WHITNEY" Chains

WE call your attention here to "Whitney" Cotter Detachable Chains as the most practical chains ever offered for motor vehicles. They have made a record for themselves which no other Detachable Type has approached.

This Cotter Pin feature is so practical and necessary that it calls for little detailed explanation. The illustrations tell their own story, proving that this form of construction is logical and necessary for chain equipped motor vehicles. This Cotter Detachable Chain can be taken apart at any link and lengthened, shortened or repaired without the use of any special tool, as the Cotter Pin can be removed with pliers, screw driver or any sharp pointed instrument. The use of "Whitney" Cotter Detachable Chains assures the builder, owner and driver of commercial vehicles uninterrupted service on account of the ease of repair.

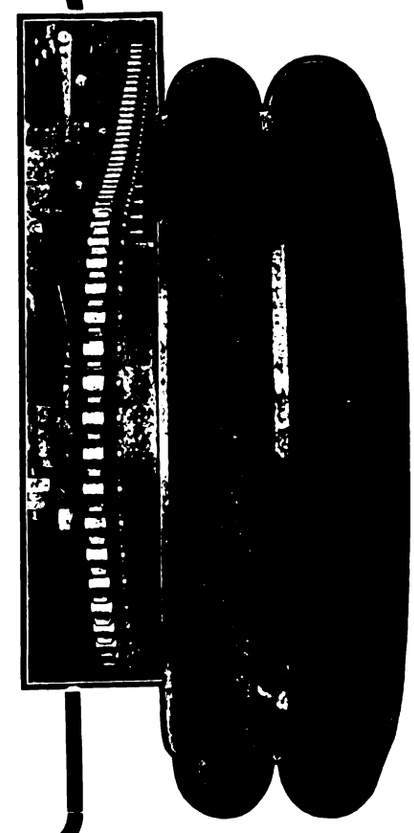
"Whitney" Chains are made from steel best adapted for the purpose, carefully hardened and calculated to resist the most wear, while in the matters of machining and assembling the utmost care is exercised and thorough inspections and tests characterize each process of manufacture. Their future service, however, depends upon the accuracy of sprockets, care, lubrication, alignment and adjustment, for the best chain in existence cannot withstand the evil influence of improper conditions and give best results.

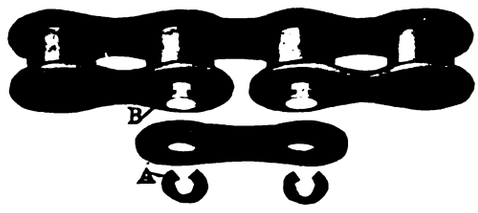
Write for our illustrated catalog which shows top and side views of each size of all Roller chains manufactured by us.

"Whitney" Chains Are Built for Strains

THE WHITNEY MFG. CO.

HARTFORD, CONN.





Baldwin Drive Chains

Both detachable and riveted, are used by the largest most exacting users of chains for automobiles in the world. They need no further recommendation.



SPROCKETS **We are equipped to make sprockets in large quantities at interesting prices, and make a specialty of carrying in stock, and furnishing sprockets for replacement on all standard commercial cars.**

Baldwin Chain & Mfg Co.

WORCESTER, MASS.

AGENTS

H. V. GREENWOOD, 122 So. Michigan Blvd., Chicago, Ill.
C. J. IVEN, Rochester, N. Y.
M. A. BRYTE, 788 Mission St., San Francisco, Cal.
AUTO EQUIPMENT CO., Denver, Colo.
C. D. SCHMIDT, 276 Canal St., New York City.
F. SHIRLEY BOYD, 903 Boylston St., Boston, Mass.



Dixon's

GRAPHITE TRANSMISSION GREASE NO. 677

Part of the power of your engine is used in overcoming the friction in your transmission and differential. Dixon's No. 677 reduces friction at these points and gives you more power for driving. Why waste gasoline to drive hard-running gears and bearings, when graphite lubrication with Dixon's No. 677 will ease up these parts and convert this "wearing-out power" into driving power? For further information, ask for "Lubricating the Motor," No. 23.

Made in JERSEY CITY, N. J., by the

JOSEPH DIXON CRUCIBLE CO.

Established 1827

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KLINE KAR

"FORTY" $1985

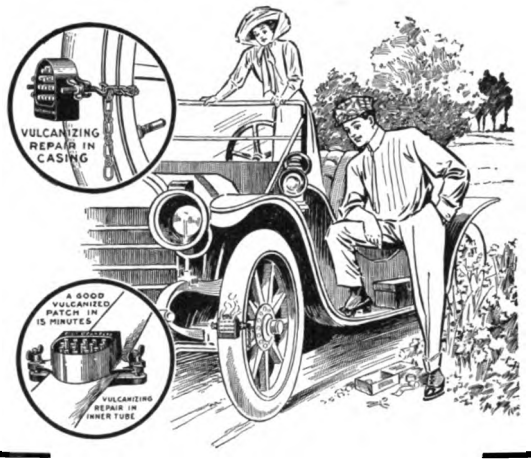
The best four-cylinder forty horsepower car on the market with separate electric starting and lighting, and separate ignition systems. The economical four speed forward transmission is another big asset.

Address Dept. W for Catalog

KLINE MOTOR CAR CORPORATION

Richmond, Va. **York, Pa.**

Main Office and Factory, Richmond, Va.



Universal Vulcanizer

You can repair CASINGS and INNER TUBES anywhere in 10 minutes, good as a Repair Shop can do—and for ONE CENT.

A PRACTICAL VULCANIZING OUTFIT COMPLETE, with enough repair gum to make 40 patches. Weighs 3 pounds, can be carried in tool box.

Price Complete **$3.50** Ready for Instant Use.

If your dealer can't supply you, we will send it prepaid. Guaranteed satisfactory or money refunded.

WARNING!!

THE Trade is hereby notified that the United States Patent Office has finally rendered judgment in favor of the Adamson Manufacturing Company, of East Palestine, Ohio, and on April 1st, 1913, granted to them Letters Patent No. 1,057,911, covering in broadest terms all types of casing and tube vulcanizers involving the principle of the Adamson Vulcanizers now on the market.

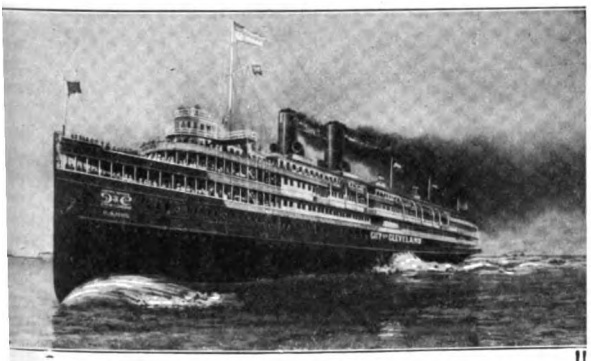
You are hereby warned that we will vigorously enforce our exclusive right to this type of vulcanizer by prompt action in the Federal Courts, and you are hereby warned against selling or offering for sale any infringing device.

The Adamson Manufacturing Company

Manufacturers of Automobile Accessories and Specialties

EAST PALESTINE, OHIO

Jobbers and Dealers Write for Revised Prices



Automobile Owners and Tourists

Should break their journey and avail themselves of the excellent facilities offered by the D. & C. Lake Lines, operating daily service between Detroit and Buffalo and Detroit and Cleveland.

Enjoy the delights of the cool breezes from Lake Erie and resume your journey in the morning after a refreshing night's rest. Special attention given by this company to the handling of automobiles. Rates quoted on application (state wheelbase); tanks of automobiles must be emptied of gasoline before being shipped. Supply is furnished free by dock attendants before leaving dock.

Roads in this section of the country are in first class condition; new road between Detroit and Toledo; tourists speak highly of the road between Buffalo and New York.

On your trip this summer, bear in mind "The Water Way is the Comfortable Way."

Send two-cent stamp for illustrated pamphlet and Great Lakes map. Address L. G. Lewis, Gen'l Pass. Agent, Detroit, Mich.

DETROIT AND CLEVELAND NAVIGATION CO.

General Offices, Detroit.

Philip H. McMillan, President.
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Are representative of mechanical precision, engineering excellence, and accessibility. The most accessible truck on the American market.

With these features they have large loading space, and no overhang, which means low rear tire expense, easy riding qualities, and readiness of maneuvering in crowded traffic conditions. These features all add to the life of a truck, and increase its efficiency and reliability.

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They will render you the same regular and dependable service in your business.

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W. Fayette Street, Syracuse, N. Y., U. S. A.

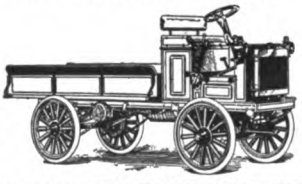
EXPORT DEPARTMENT

Room 333, 17 Battery Place **New York City, U. S. A.**

F. T. SANFORD AUTOMOBILE CO., 481-483 Park Avenue

Distributors for New York City

1-Ton Chassis and Driver's Seat $1660



1 1-2-Ton Chassis and Driver's Seat $1910

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NOTICE

We respectfully call attention to the fact that the Knox Automobile Company is the only other manufacturer licensed to build tractors under the "Martin" patents and other patents owned by Mr. C. H. Martin. These patents, we believe, cover every possible, practical combination of a self-supporting and steerable tractor, with a non-self-supporting trailer. The patents comprise the following:

Hunter.....	670,405	Mar. 19, 1901
Hunter.....	696,143	Mar. 25, 1902
Hunter.....	625,953	May 30, 1899
Thayer.....	678,063	July 9, 1901
Martin.....	1,018,248	Feb. 20, 1912
Hight.....	698,836	Apr. 29, 1902
Liebau.....	655,724	Aug. 14, 1900

and numerous applications are now pending in the United States Patent Office.

This notice is merely in the nature of general information.

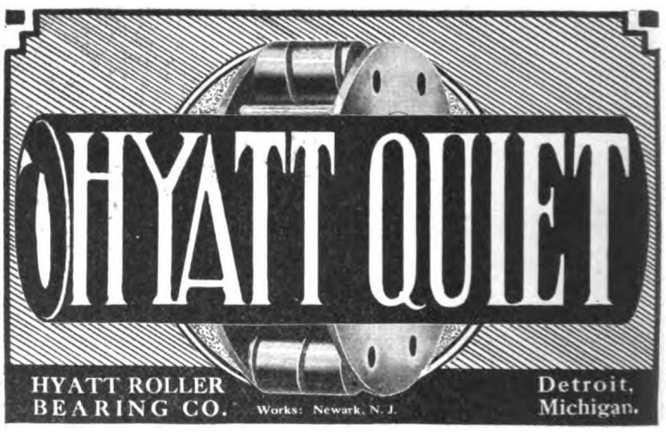
MARTIN TRACTOR COMPANY
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The Hollenden Hotel.
SUPERIOR AVE. Cleveland EAST 6TH STREET
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800 Rooms
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TRUCKS

ARE superior because they are made right—because they are built by the best workmen and of the best materials obtainable in the world—because they are made and sold by a Reliable Company, and because reliable service is afforded each Purchaser. One, two, three and five ton sizes. Bodies built at our factory to meet the demands of every line of trade. Fifty page Catalogue sent free on request. Some territory still open for reliable dealers only.

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Look to your Tires

YOU can take a *thousand miles of service* out of a set of tires by driving them insufficiently inflated over *ten miles of road.*

The New Positive Lock Stop Twitchell Air Gauge

Insures you against premature wearing out of tires.

It is TIRE INSURANCE FOR ONE DOLLAR



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The Twitchell Gauge Company
1202 Michigan Avenue CHICAGO

75% of all tire trouble due to under inflati

THERE is no method yet discovered of taining the pressure in the inside of except by the use of a pressure gauge. A containing 40 pounds of air looks and feels e like a casing containing 80 pounds. If your require 80 pounds and you only give the they're on the quick road to the scrap-heap.

USE A

SCHRADER
Universal Tire Pressure Ga
and Save Your Tires

Price, $1.00

For Sale by

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32 Rose Street, New York



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Two sessions will be held daily. There will be editorial, circulation, advertising and publishing symposiums under competent leaders. Many of the leading editors, business managers, buyers and sellers of advertising, and authorities on modern merchandising methods will take part. On Friday afternoon, September 19, there will be a mass meeting with addresses by representative business and professional men, on subjects of timely interest to editors, publishers and advertisers. Distinguished guests and worth-while speakers will be at the annual banquet, which will be made a memorable social occasion. No matter what may be your connection with the trade journal field, if you are interested in the idea of business promotion through trade press efficiency, if you believe in business papers for business men, you will be welcome at all sessions.

Full information may be obtained from

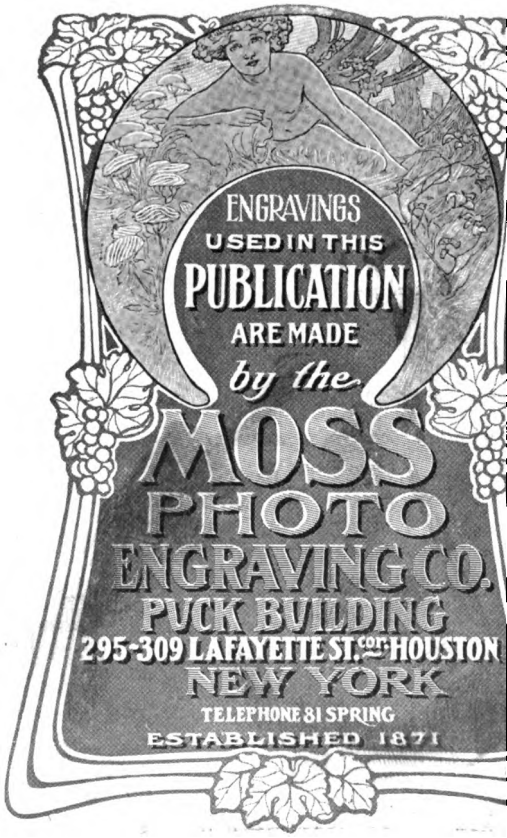
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WM. H. UKERS, Chairman, 79 Wall Street, New York

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Our agency will be a big money maker for 1914

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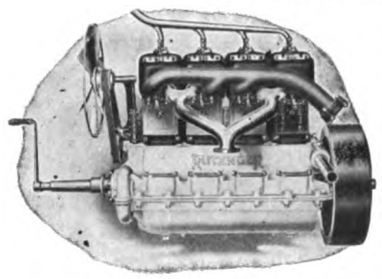
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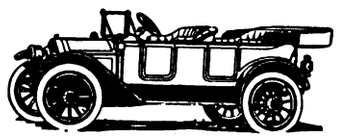
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THE UNIVERSAL CAR

NEW 1914 PRICES
Effective August 1, 1913

Model T Runabout	$500
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With Full Equipment, f.o.b. Detroit

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Model 31 108 Inch Wheel Base

The Completely Equipped Empire five-passenger touring car for $950—Equipment includes Demountable Rims, Oil Sight Feed, Dash Air Adjustment, Mohair Top and envelope, Windshield, Prest-O-Lite tank, Speedometer and Eisemann Magneto

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It Made the Automobile Safe. Do not accept substitutes. RAYBESTOS is the standard brake lining of the industry. The name is stamped on every foot for your protection.

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MULTIBESTOS
BRAKE LINING THAT GRIPS

Multibestos is made of the finest asbestos firmly interwoven with brass wire. It has the greatest efficiency and durability.

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have been used for years in several well known makes and exclusively in two of the most popular cars on the market.

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The Hearn Tire & Rubber Co., Columbus, Ohio.
Hoss Rubber Co., Denver, Colo.
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Get acquainted with the standardized "Cole"

the car that is writing gasoline history.
Learn what the

Cole franchise for dealers

will mean to you if you happen to be located in open territory.

Cole Motor Car Co. of Indianapolis



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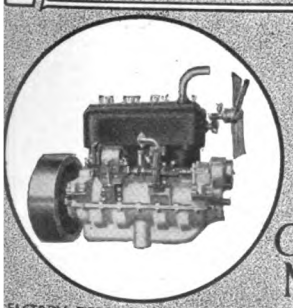
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"32" 6-Passenger Touring Car..... 1,200
"32" Roadster 1,000
"32" Covered Delivery..... 1,075
"20" Runabout 750

All Models F. O. B. Detroit. Fully Equipped.

Literature sent upon request

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1254 Milwaukee Avenue Detroit, Mich.

Type 35 Series J Raceabout



Guaranteed Speed — Mile in 51 Seconds

MERCER

The Mercer's speed and endurance record at Indianapolis and other important contests is a valuable asset from the dealer's viewpoint.

Some desirable territory open. Write today.

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THE MASTER CAR **FIAT** 16th YEAR

6 Cyl., 50 H. P., $5,000
4 Cyl., 55 H. P., $4,500
4 Cyl. 35 H. P., $4,000

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POUGHKEEPSIE NEW YORK

Simplicity, Strength, Durability

COVERT

Three important points in

Covert Transmissions

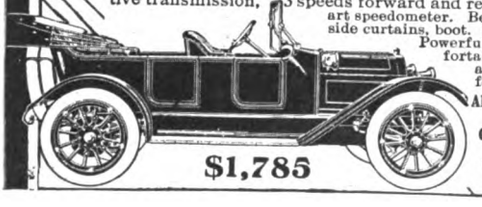
You would not think of putting an inferior motor in your car, would you? Superior transmissions are as essential as the best motors.

Covert Motor Vehicle Company
Sales Office: Ford Bldg., Detroit Factory: Lockport, N. Y.

The Kentucky Thoroughbred

Ames "45"

With Electric Self-Starter. An Electric Starter of proved efficiency is one of the features of the Ames "45"—a car with every essential refinement contributing to comfort, yet priced at $1,785. Without Starter, electric lighted, $1,635. Made with well-known "Amesbilt" body. 5-passenger, motor-driven electric lights. Perfect cooling system. Force-feed pump. Schebler Carburetor, new Remy dual system high tension magneto, oil-driven pumps. Sight-feed. Warner multiple disc, Raybestos-lined clutch. Selective transmission, 3 speeds forward and reverse. Stewart speedometer. Best mohair top, side curtains, boot. 36x4-inch Tires Powerful, speedy—comfortable—unequalled at price. Write for catalog.



$1,785

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Your Motor Car!



Electric Starter
Electric Lights
Center Control
Complete Equipment

Nyberg SIX $2000 FOUR $1650

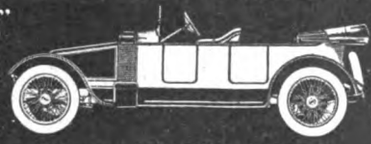
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Northern Factory Anderson, Indiana
Chicago Branch 2437-2439 Michigan Ave.
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KEETON

DETROIT, U.S.A.

"SIX-48" $3250 Fully Equipped



Riverside Touring Car

Write for Booklet

Keeton Motors Ltd. *Brantford Ont. Canada.*
Keeton Motor Co. *Lawton & M.C.R.R.* PHONE WAL. 1067 *Detroit U.S.A.*

Our 1914 Models

will be revelations in mechanical features, refinements, finish, specifications, accessories and prices.

Write for latest catalog and agency proposition for 1914.

PULLMAN MOTOR CAR CO.
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NEW SOSS CONCEALED DOOR HINGE NO. 121

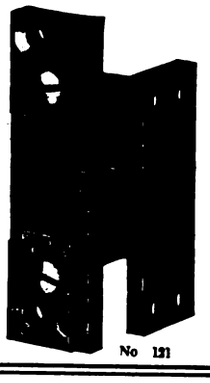
This new hinge requires a pillar only ⅞ inches wide. It is detached by removing two screws as indicated in illustration. The trouble avoided and time gained in hanging doors when using Soss Hinges are important factors.

Soss Concealed Hinges can be installed flush with the outside of the pillar, allowing the steel or aluminum panel to be turned over flush on to the face of the hinge, and fastened down securely in the rabbet provided on the edge of the face to receive it, thus allowing more than ordinary clearance.

The non-corrosive case attached to the pillar section of the hinge, prevents water from reaching the wood of the pillar through the hinge.

Description:

Face of hinge on pillar, ⅞ in. x 3¼ in.
Face of hinge on door, ⅞ in. x 3½ in.
Water-proof case mortises into pillar, ⅞ in. x 1⅝ in. x 1¼ in. deep.
Clearance in opening, 11-16 inches.


No 121

Further particulars on application

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433-435 Atlantic Ave., Brooklyn, N. Y.

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Estimates Cheerfully Furnished

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Utica, N. Y.

Any Kind Every Kind Stock, or to Blue Print

Rims

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We Also Make Axles and Hubs.

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How much does a battery cost? How long are batteries lasting? How much do other repairs and replacements cost?

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THE LONG HORN

The One Mechanical, Never Failing Warning Device

Costs Little to Buy—Costs Nothing to Operate

No Battery—No Wire—No Bulb—No Motor to break down or fail to work.

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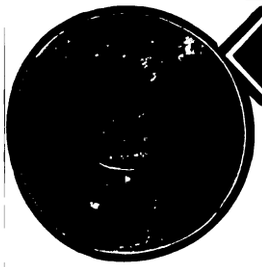
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STARTS—LIGHTS—IGNITES
SILENT—SIMPLIFIED—STURDY

Apparatus furnished in any combination, but the starting and lighting systems are sold only to manufacturers.

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Mondex-Helix Gas Mixer reduces your gasoline bills 25 to 40%.

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RHINELAND BALL BEARINGS

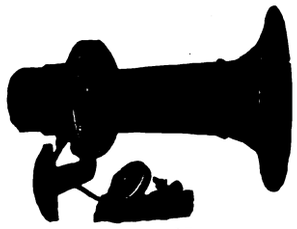
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Detachable Wire Wheels
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Houk (Quick Detachable) Rims
Guaranteed the Best in the Worla

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For Efficiency Get a
Newtone Superior
Not only the cheapest but the best

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It will interest you

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Motors, Bodies, Tops, Tires, Everything and Anything for the Automobile at Cut Prices

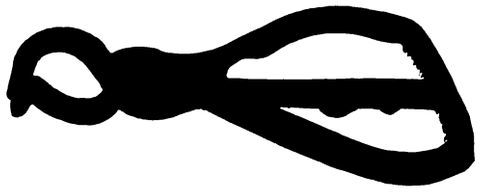
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STRENGTH COMFORT · BEAUTY ECONOMY
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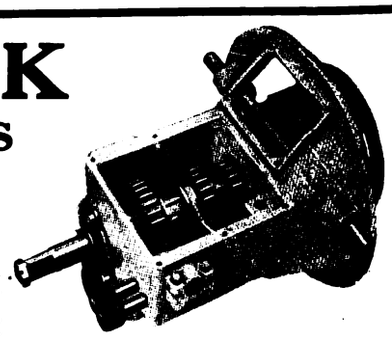
If you are in a position to handle our wheels and to give demonstrations of them we can offer you a liberal selling contract with exclusive territory and no competition. Ours is a free-trial, money back proposition to the consumer. For the dealer it means quick turns of the small amount of money invested and unusually attractive profits.

Write immediately and get the advantage of our extensive summer advertising.

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4623-4637 Spring Grove Avenue CINCINNATI, OHIO

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PARTS

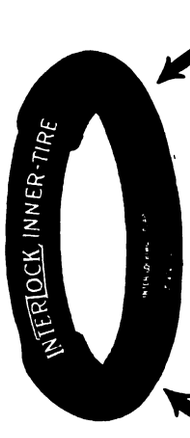
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Sliding Gear Transmissions. Unit power plant Transmissions, Cone and Disk Clutches, Control Leavers, and ELECTRO PLATING.

Write for Prices

Auto Parts Manufacturing Co.,
624 to 34 WEST ELLIOT ST. MUNCIE, IND.



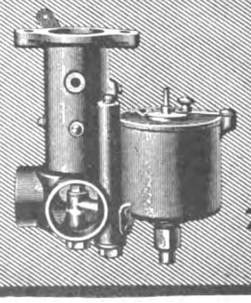
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Double Your Mileage
and Stop Tire Trouble

Interlocks are complete inner tires—not inner shoes—placed between the outer casing and inner tube to strengthen the casing and protect the tube from punctures. They insure safety—make new tires give twice the usual mileage, and add 1000 to 5000 miles to old ones. Don't affect resiliency. Make your tires blow-out proof.

Car Owners and Dealers
write for our booklet giving facts about road tests, prices, testimonials, and our 1913 proposition.

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Gives Standard Carburetion

ZENITH CARBURETOR CO.
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Automobile Supply Manu
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Stop Tempting Sneak Thieves
You can put a Hercules Auto Lock on the car of every one of your customers and guarantee them against theft, and also pocket an attractive profit into the bargain.
The Hercules automatically locks the transmission lever in neutral.
Guaranteed thief-proof and easily attached to any car.
Consumer advertising and good profit make it a real live proposition for the dealer.
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Some territory open for distributors. Live dealers can obtain full information from
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You can retail our seat-cover at a price that it on every car of every one of your Ford cus
And at the same time your profit is decide tractive.
The fit is guaranteed and you can count o grade workmanship and immediate delivery.
For our mutual benefit let us suggest that y us a postal for our agent's proposition—it's GO
We also make a complete line of tops an mings.
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Gilmer Tire Repa
The biggest live wire selling proposition that ever went across the dealer's counter. Get the details and you will surely put them in stock.
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Manufactured by the
HARTFORD MACHINE SCREW CO., Hartford, Conn.
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The Shaler is the only steam vulcanizer that permits using the approved wrapped tread method as it is the only one that applies heat to the inside and outside of a tire simultaneously. It makes perfect blow-out repairs.

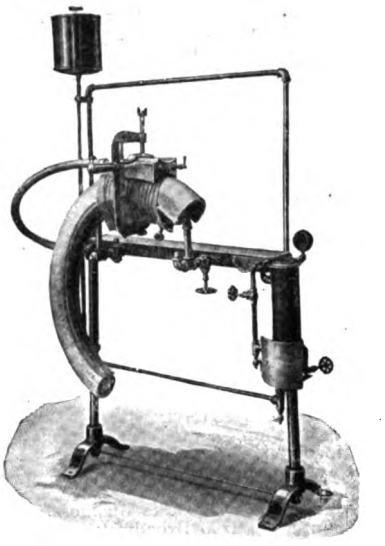
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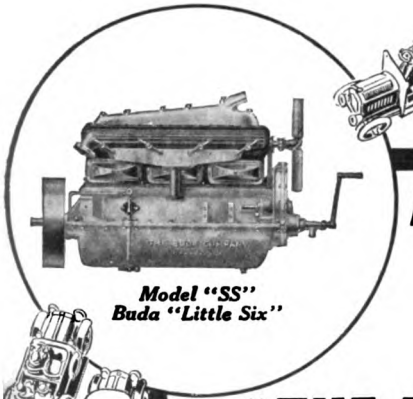
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Can a car manufacturer manufacture a car? **NO.** Never could, cannot now, never will. And the tendency of the public is to realize this more and more, and (for the sake of ECONOMY and QUALITY) to insist on the BUDA MOTOR, made by a Successful Specialist. Always look under the hood. It's a good habit.



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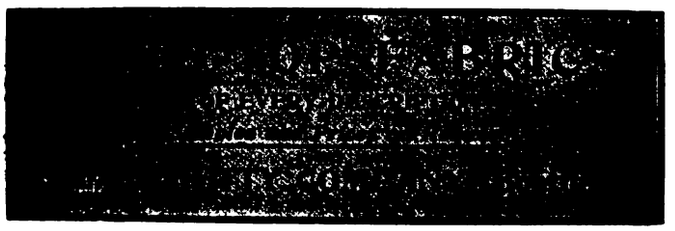
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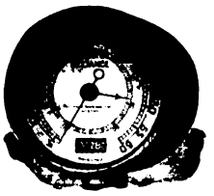
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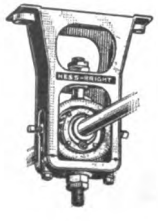
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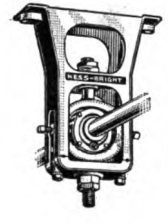
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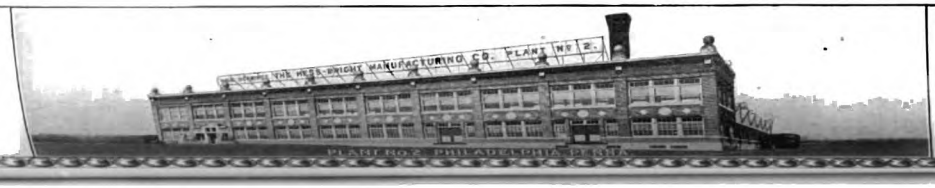
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ASK ANY ONE at all familiar with motor cars and accessories and there will be but one answer: The Klaxon.

THE KLAXON has been adopted by the A. E. C., Alco, Armleder, Autocar, H. H. Babcock, Benz, Borland Electric, Broc Electric, Buffalo Electric Roadster, Century Electric, Charon Chicago Electric, Columbia, Croxton, Davis, F.I.A.T., Havers "Six," King, Kissel, Knickerbocker, Knox, Lancia, Locomobile Lozier, Marmon, Matheson, Maxwell "Six," Mercedes, Metallurgique, Multiplex, National, Nyberg, Oakland, Oldsmobile, Packard, Peerless, Peugeot, Pierce-Arrow, Pope-Hartford "Six" Pratt, Rambler, S. & M. "Six," Schneider, S. G. V., Simplex, Stafford, Staver, Stearns, Sternberg, Stevens-Duryea, Stoddard-Dayton, Touraine, Walker Electric, Ward, White, Winton.

THIS LIST is the unanswerable indication of the Klaxon's standing.

THE car manufacturer who claims the use of "standardized" accessories must of necessity provide the Klaxon—otherwise his claims are meaningless.



KLAXONET

Lovell-McConnell Mfg Company Newark, N.J., U.S.A.

KLAXON

"The Public Safety Signal"



KLAXON

Type Composition of this advertisement done in the Klaxon Factory with "Klaxon" type especially designed by F. W Goudy

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Studebaker

THE greatest asset the Studebaker dealer has is the universal public confidence in the quality of the car itself---and in the integrity of its makers.

Studebaker dealers do not have to create this confidence---it has existed without a break ever since the Studebaker name was first placed on a vehicle.

And this public confidence in Studebaker grows greater every day.

Studebaker dealers are a powerful sales-force---selling a standard car that has behind it every resource of the great Studebaker organization --- extending Studebaker car owners a character of service that is as worthy of the Studebaker reputation as is the car itself.

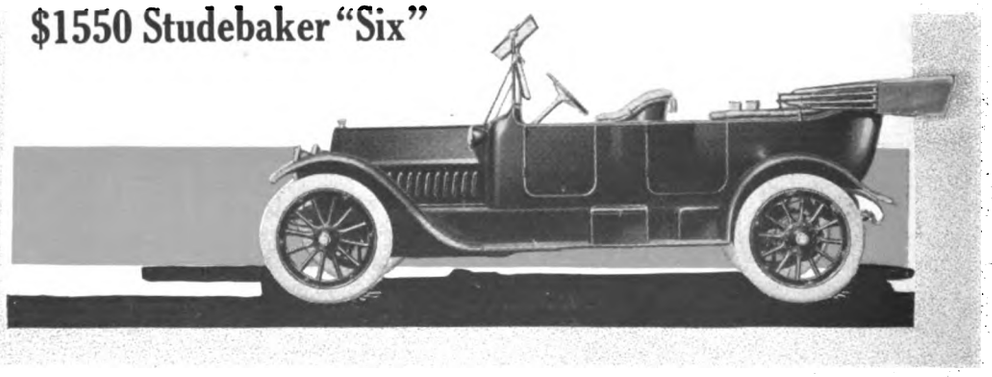
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Completely Equipped f. o. b. Detroit

STUDEBAKER, DETROIT, MICHIGAN

$1550 Studebaker "Six"



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MOTOR WORLD

A Trade Paper Giving the World's Motor News

Vol. XXXVI
No. 10

New York, August 28, 1913

Ten cents a copy
Two dollars a year

Which Starter Uses Least Current?

At first thought one might imagine that an Electric Starter spinning at 150 R. P. M. would consume more current than the ordinary Electric starter which turns the engine slowly.

But repeated tests show exactly the reverse, and that the spinning Electric Disco, instead of consuming more current actually uses less.

For example, we recently examined the batteries in six Disco-equipped cars, each of which had gone 25,000 miles, and the batteries were apparently good for years to come.

As another instance, two six-cylinder Disco-equipped cars recently driven from Indianapolis to the Pacific Coast, arrived with batteries fully charged and in the best of condition. Throughout the trip, the Electric Disco spun the motor 175 R. P. M. It did not fail once.

The reason the Electric Disco **uses less current** than slow-turning Starters, is that it **starts the car INSTANTLY.** We may use more power **per second** than others, but the time required to start is many seconds **less.**

The Limit of Simplicity

This 1914 Model 7E Electric Disco requires but **one** point of attachment to the engine, which eliminates trouble for the owner and materially simplifies installing it.

Note its **double-deck** design. It's as compact as a **motor-generator,** yet gives **all** the efficiency and service of a two-unit Electric Starter. No other Electric Starter combines **all** these good points.

As to voltage, we give you your choice—6 or 12 volts.

Not a Mere Lighting Generator

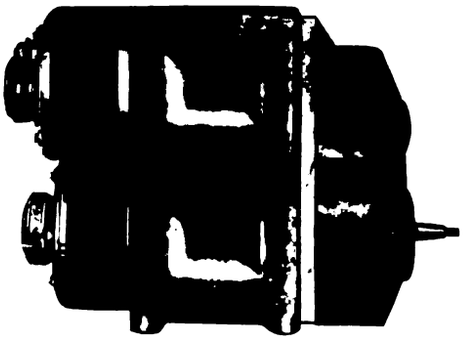
Other two-unit systems as a rule, are using their ex-lighting generators for lighting and starting. This requires occasional recharging of batteries.

Not so with the Electric Disco. Our Generator is specifically designed to **start** and **light** the car and supply enough current to keep the battery fully charged at all times. **And it DOES it!**

For complete Description and Illustration of the Electric Disco, see our latest Book on Electric Starters. Sent free to any motor car maker, motorist or dealer.

THE DISCO COMPANY

715 Dodge Building
Detroit, U. S. A.



ELECTRIC DISCO
STARTING LIGHTING

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Truffault-Hartford Shock Absorbers on Mercer Cars Assure Safe Riding

The Mercer car is the latest addition to the fast growing big list of cars whose manufacturers now include Truffault-Hartford Shock Absorbers as standard equipment.

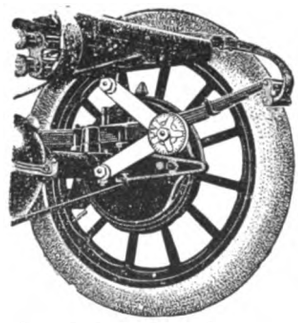
The Mercer is a very popular car among motorists—and because of its easy riding qualites has won the title of the "Touring Car de Luxe."

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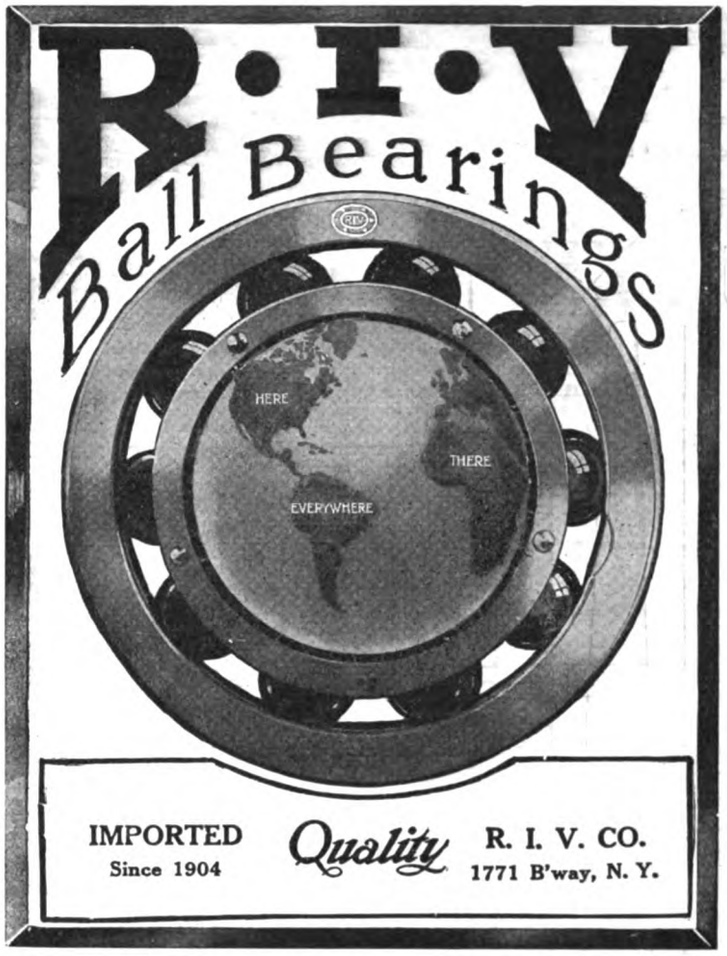
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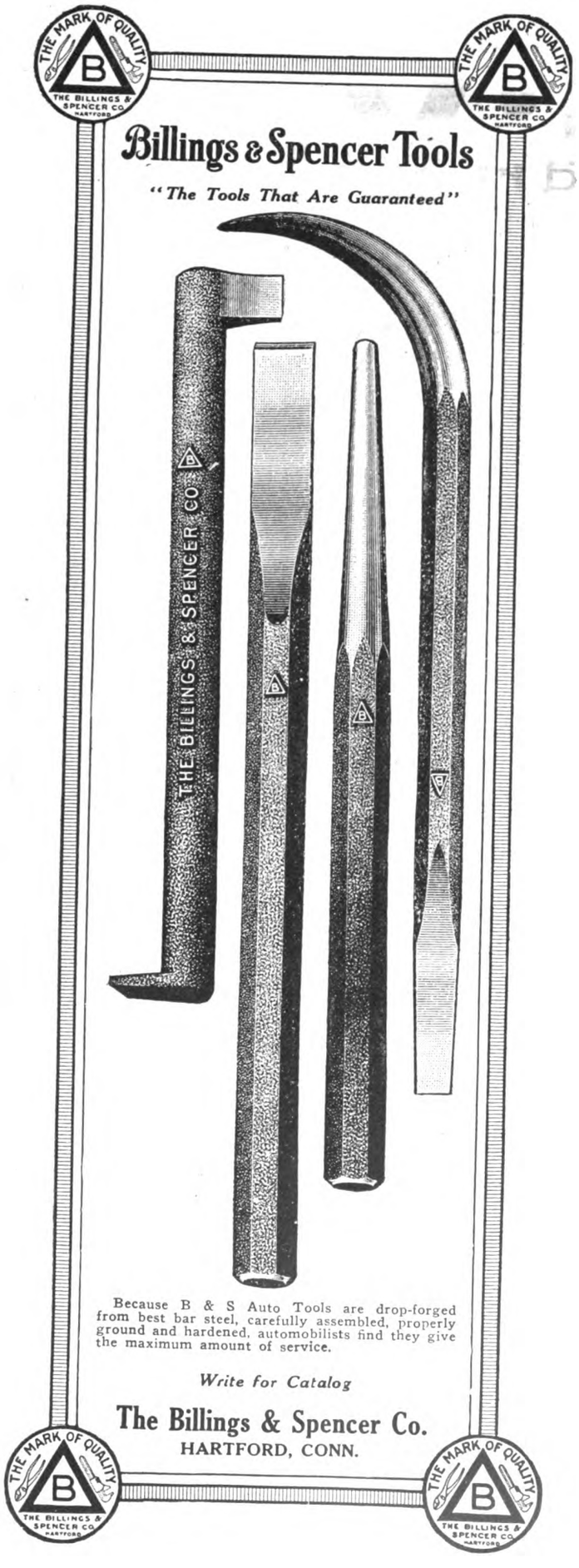
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¶ It is of MONOGRAM Quality, which speaks for itself.

¶ It is put up in nicely lithographed metal boxes.

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Overland 1914

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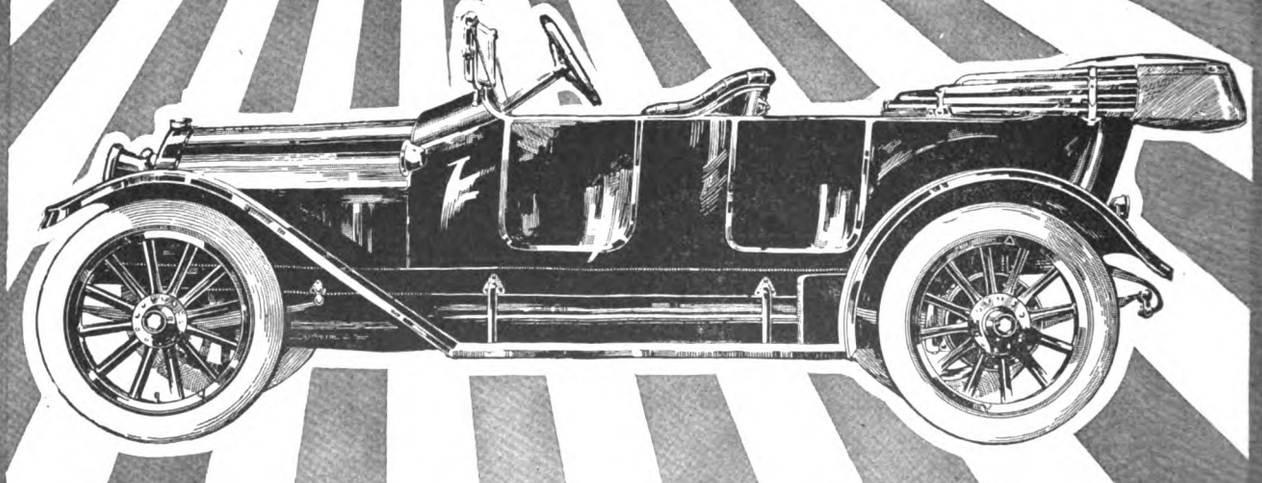
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Electric head, side, dash and tail lights
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Stewart Speedometer
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Toledo, Ohio



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MOTOR WORLD

Vol. XXXVI New York, U. S. A., Thursday, August 28, 1913 No. 10

CREDITORS TAKE HAND IN AFFAIRS OF KRIT COMPANY

Arrange for Extension of Payments and Will Take Part in Management—Weather Helps Cause Sales to Decrease.

Although the book profits of the Krit Motor Car Co., of Detroit, Mich., for the past year were $145,000, weather conditions in the West, where Krit sales are heaviest, and a general financial stringency, made it necessary for the company's creditors to take a hand in affairs Monday last, 25th inst., for the purpose of adjusting matters in an effort to save the company from more serious trouble.

Despite the fact that an indebtedness of $900,000 was disclosed, the assets are said to be ample to meet all obligations under normal conditions, and 70 per cent. of the creditors have assented to a plan which was offered by a committee consisting of L. M. Hamlin, of the McCord Mfg. Co., H. W. Standart, of the Northern Engineering Works, and John J. Ramsey, of the A. C. Knapp Co. The creditors' agreement stipulates an extension of time as follows:

Ten per cent. to be paid on or before February 1, 1914; 20 per cent. on or before June 1st and 20 per cent. on or before October 1, 1914; 15 per cent. on or before February 1, 1915; 15 per cent by June 1st and 10 per cent. by October 1, 1915, and remaining 10 per cent. on or before February 1, 1916.

Six per cent. notes, dated August 26th, in proportionate amounts, maturing as indicated above, are to be given creditors, provided 80 per cent. sign the agreement. It is expected that the stockholders will surrender 51 per cent. of the stock for the purpose of corporate control, to the Union Trust Co., as a trustee, to vote for the creditors; creditors will take the place of four directors, who will resign.

Walter S. Russell, who is regarded as one of Detroit's best and most conservative business men, and who has been intensely interested in the Krit company, was shown at the creditors' meeting to have advanced cash to the amount of $300,000, which is included in the $900,000 of indebtedness. Russell has gone as far as his means permitted, which left the request for a time extension the only exit from the situation.

Part of the consideration for entering into the agreement is that the indebtedness to Russell shall not participate in payments as before provided, but the time of payment for him shall be postponed until 50 per cent. of the creditors signing the agreement shall have been paid. Then Russell participates, so that ordinary creditors receive full payment before Russell gets 50 per cent. of his.

All bills of two hundred dollars or less are to be paid in 60 days, but it is agreed that in default of payment as set forth, the creditors may terminate the agreement.

The sudden cessation of sales was due to trade conditions and unfavorable weather. The Krit company last fall announced that a "six" would be marketed. Its line otherwise consisted of a single four-cylinder chassis upon which various bodies were mounted. The car sold for $900, and it is planned to continue with the same chassis.

Coreceiver Is Named for Walpole.

Judge Robert O. Harris, of Bridgewater, Mass., was appointed coreceiver for the financially embarrassed Walpole Tire & Rubber Co., of Walpole, Mass., by Judge Dodge in the Federal court in Boston yesterday, 27th inst. He will act with Robert M. Fisher, who was named receiver when the failure of the company's bankers caused financial trouble for the rubber workers three weeks ago. Council for the creditors' protective committee state that at a meeting of creditors and stockholders, held Tuesday, 26th inst., plans for a reorganization were proposed and that the strained feeling which preceded the naming of a coreceiver has given way to a more amicable condition.

LaCROIX ACQUIRES RIGHTS TO MERCEDES IMPORTATION

New York Dealer in Foreign Cars Given Three-Year Contract—Forms New Company and Begins Placing Agents.

The uncertainty which for some time has linked itself with the right to import Mercedes cars into the United States was dispelled late last week when Paul LaCroix, of the Paul LaCroix Automobile Co., of New York City, signed up as importer of Mercedes cars for three years in the United States and its non-contiguous possessions, Canada and Mexico. This places the Mercedes importation once more upon a firm footing, affairs having been somewhat insecure since the Daimler Import Co., of New York City, became finally involved and went into bankruptcy ten months ago.

LaCroix's acquirement of the Mercedes import rights is not a surprise, on the whole, for, as Motor World some time ago made known, he was the temporary successor to the Daimler Import and his relations with the Daimler Motoren Gesellschaft, of Untertuerkheim, Germany, the manufacturing company, have been very satisfactory. LaCroix also produced a greater volume of business than his predecessor had transacted.

The new enterprise also marks the elimination of the name Paul LaCroix from the trade, so far as a corporate name is concerned, he having not only formed a new company to handle the Mercedes business but having changed the name of the Paul LaCroix company to Foreign Automobile Importation Co. The company which will handle the Mercedes business is the Distributing & Importing Co., with a paid in capitalization of $100,000, of which LaCroix himself retains the bulk. The import contract, which he acquired personally, has been transferred to the new corporation.

Because the contract specifies that the

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Mercedes importer shall not deal in other cars, LaCroix changed the name of his original company in order that no misunderstanding might arise. What was the old LaCroix company, he states, is transacting little business, but will be permitted to exist under its new name. As in the old concern, the officers of the Mercedes importing organization are: President and treasurer, Paul LaCroix; vice-president, H. D. Kibbe; secretary, H. T. Andrews. LaCroix already has begun the placing of agencies and has awarded his Pacific Coast representation to the Rene J. Marx Co., of San Francisco. The Marx company is not a new corporation but has been engaged in the trade for some time.

Prior to his Mercedes connection LaCroix, in the quarters he still occupies at Broadway and West 57th street, New York City, imported various makes of foreign cars but had no regular contract with any particular line.

Cutting Assets Bring $30,000 Bid.

Although the assets of the Cutting Motor Co. at Jackson, Mich., were appraised at $268,653.40, the receiver's sale which was held last week brought a bid of but $30,000, and it is not unlikely that when Judge Sessions of the United States District Court at Grand Rapids, Mich., is asked to-morrow, 29th inst., to confirm the sale opposition will be offered.

The bid was made by W. M. Thompson, of the Jackson City Bank, and his offer includes the shouldering of a real estate mortgage of $15,000 with $250 interest and land contracts to the extent of $9,000 and accrued interest. There also is a mechanic's lien of $4,990. When the property was put up in parcels there was little bidding, the highest offer being made on the auctioning of the property as a whole, and more bids being received.

The Security Trust Co., of Detroit, the receiver for the company, while admitting that the bid is the highest yet made, is unwilling to consider the offer fair to the company's creditors in view of the appraisement at the much higher figure. It is also stated that the Cutting company has asked a bankruptcy trial by jury, setting up an absolute denial of bankruptcy.

Should the bid be accepted, it is anticipated that the plant will be reopened shortly in order to take advantage of the opening selling season. Whether the product would be upon the Cutting lines or a lower-priced model has not been divulged by those who seek to back the enterprise. The appraisal was: Real estate and buildings, $65,000; machinery, equipment and office furniture, $17,022.11; manufacturing stock and parts, $87,475.34; accounts receivable, face value, $99,155.95.

ALCO FORMALLY ABANDONS AUTOMOBILE MANUFACTURE

Long Continued Loss Leads Company to Quit Car and Truck Building —International Offers to Take the Service Business.

Despite the fact that similar rumors have on several previous occasions been flatly denied and that only two weeks ago all knowledge of any impending action of the kind was denied by an officer of the company, the American Locomotive Co., of Providence, R. I., through its board of directors, decided at a meeting held on August 13th to discontinue the manufacture and sale of both its Alco pleasure and commercial vehicles, though no hint of the action was permitted to become public until last week.

Although the formal announcement makes plain that arrangements will be made to furnish repair parts for a period of not less than five years to come and that the company's guarantee will be lived up to in every respect, inquiry of President W H. Marshall elicited no information regarding plans for the disposal of the company's several service stations located in Long Island City, N. Y., Chicago, Boston, Philadelphia and on the Pacific Coast. It is known, however, that the International Motor Co. has made an offer to take over that part of the business, though information as to its kind was not forthcoming from the officers of the company.

Vice-President Fulton of the International company on Wednesday stated to a Motor World man that "We would be very glad to take over that part of the business and we have made a proposition to S. G. Averill to that effect which, he has stated, he will be glad to consider." Averill is an efficiency engineer and is financially connected with the Automobile Department of the Alco.

The reason for the abandonment of the Alco automobile business is not difficult to discern, for it long has been known that it represented a leak in resources of no small amount; it is rumored that not less than $600,000 was dropped last year alone. That the company had turned away from pleasure car production as a serious proposition is indicated by the fact that during the last year some 85 per cent. of its automobile business has been in commercial vehicles.

When rumors of the proposed abandonment of the automobile department became current a year ago, they were more or less hushed up by the entry into the company of two expert efficiency engineers—J. W. De B. Gould and S. G. Averill—who proceeded to study its needs and to suggest remedies. About the same time, Vice-President Leigh Best was placed in charge of the automobile department. Since then a steady improvement in efficiency and prosperity have been reported from those on the inside." In view of this fact and the fact that the automobile department's business during the past year showed a substantial gain over every other year, the decision to abandon it and to dispose of the immense Providence shops is all the more astonishing to those in the trade.

According to conservative estimates, the Providence plant is said to have a real estate value of close to $1,000,000 and the buildings are equipped with modern machinery, tools, jigs, etc., which will bring the total value well above that figure. In Long Island City there is a completely equipped service station only recently acquired that is valued at $250,000; the Chicago branch is said to have cost in the neighborhood of $112,000, and the Pacific Coast station $175,000; buildings occupied in Philadelphia and in Boston are leased at annual rentals of $25,000 and $5,000, respectively, and the New York branch which occupies the whole building at Broadway and West 61st street, is tenanted on a lease which still has 14 years to run. To meet any loss that may occur in the liquidation of the business, a reserve fund amounting to $2,300,000 has been set aside from the accumulated surplus.

The American Locomotive Co. first entered the automobile business in 1905, when it obtained the American rights to the French Berliet car. From Lyons, France, a force of expert mechanics was brought to the United States, and in an addition to the existing plant in Providence the production of American Berliet cars, rechristened Alco, was taken up. Two years later, or in 1907, the production of commercial vehicles was commenced. Although both types of vehicles have always proved more than ordinarily popular with the buying public, sales never have beeen as extensive as was hoped would be the case.

In an attempt to increase sales, Harry S. Houpt was engaged as general sales manager about two and a half years ago. At that time the company had only four agencies. With a liberal advertising appropriation, Houpt began an aggressive campaign which resulted in an increase of some 300 per cent. in sales and the acquisition of 85 agencies. Houpt left the Alco company last March, however, and though he left the automobile department in a better condition than ever before, it was judged inadvisable, in view of previous losses and with a new season coming on, to continue the business longer.

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DODGE CAR AN $850 "FOUR"; NOT TO COMPETE WITH FORD

Parts Builders also to Retain Their Large Holdings in Ford Business — Light Thrown on Rumors Concerning Both Interests.

Apparently that Dodge car which has been announced anew by Dodge Bros., of Detroit, Mich., this time to make its appearance on July 1st, 1914, practically simultaneously with the expiration of existing contracts with the Ford Motor Co., is not to be a "six," after all; nor is it to compete directly with the Ford, despite persistent rumorings to that effect; according to the latest information, which comes from authoritative sources, it is to be a four-cylinder machine selling for an amount in the neighborhood of $850.

That the Dodge Bros. will cease to make any more parts for the Ford Motor Co. when existing contracts expire on July 1st, after having furnished Ford parts for 12 years, during which time the annual business between the two companies has been increased from practically nothing to a total of more than $10,000,000 last year, presages no alterations in the organization of either, other than that John F. Dodge probably will resign the vice-presidency of the Ford Co., is reiterated by both Dodge brothers; no change will be made in the organization of Dodge Bros. The Dodge brothers have no present intentions of relinquishing their Ford holdings, which are valued at $25,000,000.

Just how many cars will be produced by Dodge Bros. during the first year has not been definitely determined, nor have the details of the car itself been fixed. It is planned to produce a limited quantity the first year and to increase the supply as the demand increases. That the car will be marketed by Dodge Bros.'s dealers seems certain, for though it has been rumored, and even published as a fact, that it will be sold alongside Ford cars by Ford dealers, any proceeding of the kind seems highly improbable, for the Ford business is quite big enough to require all the energy of Ford dealers, and the Dodge Bros. have plenty of money to hire sales brains and selling ability of their own. At the Ford plant it is said that nothing is known regarding any arrangement of the kind between the two companies.

Although Dodge Bros. have, up to the past year, furnished nearly 70 per cent. of the Ford parts, some 180,000 sets having been turned out last year, the Ford company now is turning these parts out itself with the exception of a limited number of sets of gears still being produced by the Dodges.

Quite naturally, such an increase in production activities at the Ford plant has necessitated additions to the already extensive buildings, and it is these plans that probably have given strength to repeated rumors that the Ford company intended devoting the additional space to the production of wire wheels. A new wing, approximately 1,000 feet long, now is being put up, but that it will not be used for the manufacture of wire wheels is authoritatively stated by Chief Engineer Wills, though he tempers the statement by adding that he does not know whether wire wheels ever will be used.

"As far as wire wheels are concerned," Wills stated to a Motor World man, "I am not in a position to say that we will use them or that we won't use them. Our present position is one of interestedness without any definite plans. We have been investigating and experimenting with wire wheels for a matter of seven years. Every once in a while I take a spurt at it, and we have developed a number of tools for wire swaging and rim making that will enable us to manufacture wire wheels should we ever need them. We are in this position: If we should decide to use wire wheels, we have had sufficient experience through our experimenting so that everything is ready to go ahead should we want them, but we have not bought any parts nor purchased any machines with which to manufacture wire wheels or wire wheel parts. I really do not know what we will do. All there is to it is that if we should decide at any time that we want to have wire wheels, we will be in shape, as far as our ideas are concerned, to go ahead without any further experimenting and testing."

Property already has been acquired for the necessary addition to the Dodge plant and the erection of the first unit, which will be an assembling plant, will be commenced at once; it will stand on Bismarck street, be 900 feet long and furnish more than 20 acres of floor space.

Midland Creditors Offered 20 per Cent.

As was intimated would be the case during the controversy preceding the appointment of J. H. McCullough as trustee of the bankrupt Midland Motor Co., of Moline, Ill., the Midland company now has offered its creditors, through Vice-President Jean A. Page and Treasurer R. E. Deitz, a composition amounting to 20 cents on the dollar. It is stated that the claims will closely approximate $400,000 and that the company's assets, including property at the plant, have been appraised at $119,000. A meeting of creditors will be called to pass upon the acceptability of the composition.

MOLINE COMPANY LICENSED TO BUILD KNIGHT MOTORS

Will Use Sliding Sleeve Valve Motor in One Model — Poppet Valve Model to Be Continued With Few Changes.

Adding one more to the slowly lengthening list of automobile manufacturers who have embraced the Knight sliding sleeve valve motor, the Moline Automobile Co., of East Moline, Ill., has acquired a license to build and to use the Knight motor, and will feature it in one of its 1914 model cars. Though the information is in the nature of a genuine surprise, the move long has been contemplated; the decision to use the Knight motor has not been made over night, so to speak, though nothing of the plans of the company has been permitted to escape.

As yet, the specifications of the motor have not been made public generally, though it is practically assured that it will have four cylinders, for the Moline company is one of those that never has embraced the "six"; during the past it has adhered exclusively to its single four-cylinder chassis, and this, it is understood, will be continued during the 1914 season with nothing more than detail refinements.

With the addition of the Moline company to the roster of American Knight engine users, the list now includes five makes of cars in which the Knight engine is used; they are as follows: Edwards-Knight, Stearns-Knight, Atlas-Knight, Columbia-Knight and the Moline-Knight.

Berry Withdraws from Jeffery Company.

G. N. Berry, who in 1902 entered the employ of the Thomas B. Jeffery Co., of Kenosha, Wis., and who in January last became a stockholder in the company and was elected second vice-president and treasurer, has formally resigned those offices and relinquished his stock in the company. Although his future plans are not yet perfected, it is understood that he is considering offers to act either as manufacturer's agent for a prominent accessories maker or to become identified with some other automobile manufacturer.

Grant Company Plans Expansion.

The Grant Motor Co., which some time ago was formed in Detroit by George B. Salzman and the Grant brothers—George D. and Charles A.—has increased its capitalization from $165,000 to $200,000. The increase in capitalization, it is stated, is to permit the production of nearly double the number of cars originally scheduled.

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20% GAIN IN CAR EXPORTS FOR FISCAL YEAR OF 1912

Value of Cars and Parts Shipped in Twelvemonth $33,787,330—Increase of $5,762,198 — Parts, Engines and Tires also Advance.

Automobiles and allied products to the value of $36,925,349 were exported from the United States during the fiscal year ending June 30, as previously stated in Motor World, but a more complete report of the government statisticians reveals the volume purchased by the 12 geographic divisions into which the world is divided for export calculation and also shows the gains and losses as compared with the fiscal year of 1912. Of the $36,925,349, which represents cars, parts, engines and tires, the value of cars and parts shipped abroad and to the non-contiguous American possessions was $33,787,330, a gain of $5,762,198, or 20 per cent. The number of cars was 26,903, an increase of 3,788, which is 16 per cent.

Of the 12 geographic divisions, the United Kingdom and British Oceania permitted themselves to be registered in the loss column in cars and value and Mexico dropped behind by 3 cars, but all the other divisions recorded substantial increases. In actual value Canada was the leader, with an increase of $1,672,906, or 22 per cent., but in percentage of value increase Germany is well to the fore with an advance of 240 per cent., or $542,191. South America made the next largest monetary gain, $1,254,139, which is 66 per cent., and second position in percentage increase belongs to Other Countries which moved upward by 196 per cent., or $893,543.

South America leads in the gain in number of cars purchased, buying 1,209 more than it did in 1912, an increase of 75 per cent. The next highest number gain was made by Asia and Other Oceania, which increased its takings by 1,094, or 96 per cent. In the percentage of number gained, Other Countries is the leader, with an advance of 204 per cent., or 983 cars, and Germany is second with 195 per cent., or 561 cars. The grand total increase for the month of June was: Cars, 125, or 6 per cent.; value, $210,585, or 8 per cent.

The 1913 tire exports were $3,943,220, those of 1912 $2,657,809, and the gain $1,285,411, or 48 per cent. The number of engines exported in 1913 was 11,402, in 1912 6,891, and the gain 4,511, or 65 per cent. The value of engines exported in 1913 was $1,728,596, in 1912 $778,098, and the gain $950,498, or 122 per cent. Parts, for the twelvemonth, gained $1,133,444, an advance of 27 per cent. Cars and parts advanced $5,596,239, or 22 per cent., in the foreign world not including the American possessions. Cars themselves, in number, increased 3,529, or 16 per cent.

The American possessions gained 259, or 19 per cent., in cars exported, and the value of cars and parts advanced by $165,959, or 7 per cent. The figures in detail are shown by the subjoined table.

	June				Twelve Months Ending June					
	1912		1913		1911		1912		1913	
	Quantities.	Values.	Quantities.	Values.	Quantities.	Values.	Quantities.	Values.	Quantities.	Values.
France	67	$49,905	71	$54,746	310	$473,122	574	$469,721	824	$625,795
Germany	27	35,787	157	136,171	99	209,663	288	226,227	849	768,418
Italy	42	35,185	55	33,098	136	188,405	211	193,037	331	280,961
United Kingdom	327	222,961	386	289,457	2,249	2,273,222	5,716	4,454,448	3,979	3,026,895
Other Europe	161	161,123	204	171,783	652	732,878	1,223	1,031,434	1,805	1,540,437
Canada	755	1,026,567	383	596,681	4,687	5,047,927	6,288	7,560,655	7,212	9,233,561
Mexico	7	8,470	5	9,505	350	614,160	273	418,599	270	506,486
West Indies and Bermuda	30	31,822	23	19,315	273	346,974	329	350,410	438	449,421
South America	167	174,145	169	187,185	664	835,473	1,611	1,911,066	2,820	3,165,205
British Oceania	146	143,376	318	332,212	1,477	1,281,975	3,625	3,280,988	3,062	2,914,451
Asia and Other Oceania	136	158,478	206	207,105	664	695,747	1,137	1,197,155	2,231	2,151,392
Other Countries	76	68,355	177	153,894	242	265,503	482	456,369	1,465	1,349,912
Total cars	1,941	$2,116,174	2,154	$2,191,152	11,803	$12,965,049	21,757	$21,550,139	25,286	$26,012,934
Commercial†	1,941	2,116,174	115	167,391	11,803	12,965,049	21,757	21,550,139	993	1,737,141
Passenger†	.....	.....	2,039	2,023,761	.....	.....	.....	.....	24,293	24,275,793
Parts*	.....	361,835	.....	549,616	.....	2,544,180	.....	4,107,155	.....	5,240,599
Total cars and parts*	1,941	$2,478,009	2,154	$2,740,768	11,803	$15,509,229	21,757	$25,657,294	25,286	$31,253,533
To American Possessions—										
Hawaii—Cars	46	80,341	54	70,413	370	723,056	498	862,101	718	1,182,166
Parts*	.....	4,125	.....	6,172	.....	68,028	.....	68,518	.....	107,640
Porto Rico—Cars	44	76,513	16	24,729	252	519,645	441	668,498	323	406,440
Parts*	.....	15,341	.....	7,114	.....	96,074	.....	125,735	.....	93,813
Philippines—Cars	63	94,516	94	105,919	309	382,551	401	557,368	560	668,849
Parts*	.....	1,174	.....	7,195	.....	62,581	.....	62,631	.....	53,434
Alaska—Cars	7	9,439	8	7,585	1	850	18	18,524	16	18,435
Parts*	.....	783	.....	931	.....	1,114	.....	4,463	.....	3,020
Total	160	$282,232	172	$230,058	932	$1,853,899	1,358	$2,367,838	1,617	$2,533,797
Grand total	2,101	$2,760,241	2,326	$2,970,826	12,735	$17,363,128	23,115	$28,025,132	26,903	$33,787,330

* Does not include engines and tires. † Not separately stated prior to July 1, 1912.

IMPORTATION OF CARS IN TWELVEMONTH LESS BY 18%

America's Purchases Abroad Fall Away by $374,801—United Kingdom and Other Countries Heaviest Losers—But Two Gain.

The importation of automobiles into the United States during the fiscal year ending June 30 decreased by $374,801, or 18 per cent., as compared with the fiscal year of 1912; also, the number of cars fell away by 215, or 22 per cent. Parts decreased $40,317, or 13 per cent., and cars and parts by $415,118, or 17 per cent.

The heaviest monetary losses were those of the United Kingdom—$215,679, or 50 per cent.—and other Countries—$47,110, or 17 per cent. These two divisions, also, recorded the heaviest losses in number of cars, the United Kingdom dropping behind by 110 cars, or 58 per cent., and Other Countries by 29 cars, or 23 per cent. But two gains were shown; Germany increased the value of its shipments by $1,855, or 7 per cent., and Italy by $6,376, or 3 per cent. The figures in detail are as follows:

	Twelve Months Ending June 30—			
	1912		1913	
	Number.	Values.	Number.	Values.
France	401	$964,635	357	$844,392
Germany	116	259,313	99	261,168
Italy	131	199,555	116	205,931
United Kingdom	188	434,611	78	218,932
Other Countries	127	276,067	98	228,957
Total cars	963	$2,134,181	748	$1,759,380
Parts (except tires)	...	304,144	...	263,827
Total cars and parts	963	$2,438,325	748	$2,023,207

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The Week's Incorporations



CONVENIENT AND SIMPLE ARRANGEMENT OF THE STEWART MOTOR CORPORATION'S FACTORY IN BUFFALO, THE CAPACITY OF WHICH HAS BEEN DOUBLED WITHIN THE PAST TWO WEEKS

Louisville, Ky.—Monarch Auto Co., under Kentucky laws; authorized capital, $10,000.

Raleigh, N. C.—Alta Motor Car Co., under North Carolina laws; authorized capital, $10,000.

Los Angeles, Cal.—National Cushion Inner Tire Co., under California laws; authorized capital, $100,000.

Philadelphia, Pa.—S. & T. Auto Co., under Pennsylvania laws; authorized capital, $25,000; to deal in automobiles.

Springfield, Mass.—Baxter-Chesebro Co., under Massachusetts laws; authorized capital, $10,000; to deal in motor cars.

Wilmington, Del.—The Muier Co., under Delaware laws; authorized capital, $100,000; to manufacture and deal in motor cars.

Pass Christian, Miss.—Union Auto Co., under Mississippi laws; authorized capital, $5,000. Corporators—J. L. Jones, J. B. Williams and others.

Spokane, Wash.—Auburn Auto Co., under Washington laws; authorized capital, $10,000. Corporators—D. V. Woods, J. W. Fisher, L. V. Gray.

Everett, Wash.—Standard Gas Engine & Auto Repair Co., under Washington laws; authorized capital, $5,000. Corporators—Jacob Anthes, Adolph Bosshard.

Portland, Ore.—Motor Appliance Mfg. Co., under Oregon laws; authorized capital, $50,000. Corporators—Chester A. Groat, George G. Chute, John T. Akern.

Louisville, Ky.—Reid Auto Co., under Kentucky laws; authorized capital, $5,000; to sell and rent automobiles. Corporators—A. E. Reid, Alta Reid, W. G. Clapp.

Chicago, Ill.—Henderson Motor Co., under Illinois laws; authorized capital, $1,000; to deal in cars and accessories. Corporators—Frank L. Childs, H. C. Peterson, D. V. Harlan.

Lafayette, Ind.—Lafayette Taxi Co., under Indiana laws; authorized capital, $10,000; to operate a taxicab and transfer service. Corporators—C. T. Bartel, F. C. Newman, L. L. Lefler.

Guilford, Me.—Tire Buyers, Inc., under New York laws; authorized capital, $600,000; to deal in automobile tires. Representative—Mortimer F. Levy, 47 West 34th street, New York City.

Indianapolis, Ind.—Peterson-Keyes Auto Co., under Indiana laws; authorized capital, $10,000; to deal in cars and trucks. Corporators—William B. Peterson, Paul H. Keyes, A. A. Peterson.

Rochester, N. Y.—Rochester Motors Co., Inc., under New York laws; authorized capital, $300,000. Corporators—George F. Davison, E. A. Grenelle, Albert H. Stearns, 229 Meigs street, Rochester.

New York, N. Y.—Fordham Auto Van Co., Inc., under New York laws; authorized capital, $5,000. Corporators—John Forbes, Catherine Kelly, Louis Bissinger, all of 232 East 101st street, New York City.

New York, N. Y.—Liverani-Lombardi Motor Co., Inc., under New York laws; authorized capital, $20,000; to manufacture hydro-carbon motors. Corporators—Arthur H. Marr, Francesco Lombardi, Joseph Liverani, 321 West 47th street, New York City.

New York, N. Y.—George H. Kusel & Co., Inc., under New York laws; authorized capital, $1,000; to conduct an automobile business. Corporators—George H. Kusel, 1360 Boston road; Adolph Har-

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nischfeger, 661 Jefferson place; Patrick O'Keefel, 141 Cherry street, all of New York City.

Minor Business Troubles.

The Kissel Service Station, at 215 West Monroe street, Bloomington, Ill., has been closed by the sheriff and two cars attached as chattels; the cause of the move was the failure of Frank Leavenworth, the manager, to pay $70 back rent.

The Alborak Auto Co., of New York City, has filed a notice of dissolution with the Secretary of State; it was incorporated October 25, 1905, with a capital of $3,000. Fredereick R. Welch was president and John G. James secretary.

La Buire Import Co., of 1974 Broadway, New York City, a dealer in supplies, has filed a petition in bankruptcy; it states that its liabilities are $4,131 and its assets $3,246, consisting of: Accounts, $2,982; office furniture, $100; stock, $66; cash, $98. The business was started in March, 1907, and was incorporated September 14, 1908, at $5,000. George H. Key is president.

An involuntary petition in bankruptcy has been filed against A. A. Stevens & Co., of 1234 South Wabash avenue, Chicago, a maker of automobile tops and awnings; the petitioner is the Santa Rosa Vallejo Tanning Co., of Santa Rosa, Cal., which claims the company's assets are about $6,000 and its liabilities in excess of $10,000. The petitioner has a claim of $1,247.98.

Following the attachment by the sheriff of the property of the Oakland Sales Co., of East Orange, N. J., a week ago, a receiver has been appointed for the company; Raymond E. Smith, cashier of the Roseville Trust Co., of Newark, N. J., and head of the Oakland Sales Co., caused the embarrassment by disappearing after the funds of the trust company had been found short. The Goodyear Tire & Rubber Co. and the Standard Oil Co. also have commenced bankruptcy proceedings against Smith as an individual.

Edward K. Nicholson, of Bridgeport, Conn., has instituted foreclosure proceedings on a note against the Bridgeport Vehicle Co. and the Blue Ribbon Auto & Carriage Co. He claims that January 1, 1909, Dolisca F. Terry loaned the vehicle company $2,000 on a demand note and that in July of the same year James W. Horton loaned the same company $3,000 on a similar piece of paper. After other moves in the case, the paper and a mortgage came into Nicholson's possession. He alleges that in January of this year the vehicle company attempted to, or did, transfer its property to the Bellamore Armored Car Co., which went into bankruptcy in the following month.

PROMINENT MEN IN TRADE WHO ASSUME NEW DUTIES

Resignations and Promotions That Serve to Place Many Workers in New Places—Few Leave the Industry.

E. F. Warren has been appointed chief draftsman in Plant No. 10 of the Studebaker Corporation.

Chester C. Boynton, former sales manager for A. R. Mosler & Co., has resigned to accept a position as sales manager of the Greek-American Sponge Co., of Chicago. Boynton is located in New York City.

E. N. Sanders, formerly manager of the Moon Motor Car Co. of Illinois, has been made manager of sales west of the Rocky mountains; Sanders is one of the veterans of the trade, having originally been allied with the bicycle business.

W. E. Wardlaw, manager of the New York branch of the Schoen-Jackson Co., has tendered his resignation to take effect September 1; after a month's vacation in Canada he will associate himself with a new carburetter company, the name of which has not been disclosed.

E. E. Hand, formerly connected with the Abbott-Detroit and Thomas companies, has been made a district manager for the new J. I. Handley Co., of Indianapolis; he is not new to his territory, which includes Cleveland, Pittsburgh, Buffalo, Philadelphia, Baltimore and Washington.

Charles Fisher, formerly manager of the Chicago branch of the Universal Motor Truck Co. and later a district manager, has been appointed a district manager for the Mogul Motor Truck Co., of Chicago; he has all territory east of Chicago and while the factory is in Chicago his headquarters are in New York City.

Robert R. Ramey has been appointed southern district manager for the Lozier Motor Co. and will immediately take up his headquarters in New Orleans; Ramey began his connection with the Lozier company in Philadelphia in 1906, and for the last three years was sales manager of the General Motor Car Co., which handles Loziers in Philadelphia.

Correja Distributers to Build Own Car.

Following its arrangement to handle exclusively the entire factory output of Vandewater & Co., of Elizabeth, N. J., which produces Correja cars, the Thomas Howard Co., of 319 Atlantic avenue, Brooklyn, N. Y., is preparing to go into the production of a light roadster of its own and which will bear its own name; a factory in Detroit already has been obtained and it is planned to have the first of the cars on the market by September 10th. The new Howard roadster is to be a "near" cyclecar, which is to say it will be very light, have a wheelbase of 100 inches and standard tread.

Motive power will be furnished by a four-cylinder water-cooled motor and transmitted through a three-speed selectively controlled gearset and shaft; wire wheels will be standard. Although the list price of the car is to be $450, it will be fully euippped and likely will have an electric gear-shifting apparatus manufactured under Hollister patents which have been acquired for the purpose. Incidentally, it is proposed to market the cars under a rather unusual method, whereby purchasers will be afforded the opportunity of making "time" payments, though the dealer will receive his full profit at the time the sales contract is signed.

Amplex Receiver to Continue Operation.

Until the parts on hand are all used up, at least, the works of the Amplex Motor Car Co., of Mishawaka, Ind., which two weeks ago were placed in the hands of M. W. Mix as receiver, will continue to be operated; Judge Funk granted the receiver's petition to continue operation and incur expense. It is expected that a fair amount will be realized from the disposal of completed parts.

Factory Site for Oregon Company.

As a site for its projected factory buildings, the Beaver State Motor Co., which proposes to build cars near Portland, Ore., has purchased a five-acre tract of land in the suburb of Gresham. The erection of a building measuring 60 x 300 feet and to cost approximately $25,000 will be commenced immediately.

Recent Losses by Fire.

Urichsville, Ohio—Barr Bros., garage destroyed. Loss, $18,000.

Quincy, Ill.—Shackleford Garage, damaged. Loss not stated.

Cranston, R. I.—Henry C. Angell, Princess street, garage damaged. Loss not stated.

St. Louis, Mo.—Coyne Automobile Co., 902 Cass avenue, building destroyed. Loss, $40,000.

St. Paul, Minn.—G. E. Michael, White Garage, and M. J. Osborne, dealer, 3d street and College avenue, building and four cars damaged. Loss, $23,000.

Changes of Capitalization.

Columbus, Ohio—John W. Brown Mfg. Co., from $490,000 to $640,000.

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In the RETAIL WORLD

David Thomas, of Lewistown, Pa., is about to build a garage.

R. G. Cowham has purchased a site in La Mesa, Cal., and will erect a garage.

Raymond McIntyre and Frank Scheetz, of Sellersville, Pa., plan to open a garage.

C. W. Guth is having a garage erected in Wescoesville, Pa. He will stock Buicks.

W. F. Parrish, of Palmetto, Fla., is having a garage erected on East Myrtle street.

George E. King is erecting a garage in Atchison, Kan. The site is on Main street.

F. G. Goodman, of 8515 Lorain street, Cleveland, Ohio, proposes to build a garage.

The Dupee Hardware & Auto Co., of Aberdeen, S. D., has erected a new building.

J. H. Cardwell has opened a garage in Madera, Cal. He also will handle Buick cars.

A new garage is being erected in Camden, Me., for F. W. Hill; it will stand on High street.

A garage will be erected in Lincoln, Neb., at 221 9th street, for Nicholas Ress; it will cost $10,000.

John A. Hamilton, of Columbia, S. C., has opened a garage; it is located at 1216 Main street.

The S. W. Crawford Auto Co. has opened a garage in De Soto, Mo. It is located on Easton street.

The Camden Motor Co. has entered the trade in that Arkansas town; it will conduct an agency.

Rivers & Petrie have purchased the Reek Garage in Marshall, Mich. It is located on West Main street.

Fred C. Schneider, of New Brunswick, N. J., has been granted authority to erect a garage on French street.

S. M. Stone, formerly manager of the Chicago Marathon branch, has set up as a dealer; he has the King line.

Judson C. Rives, of Los Angeles, has secured permission to erect a garage at 12th street and Westchester place.

Horace Farish, of Morrilton, Ark., is erecting a garage; he will open up as a garageman and accessory dealer.

H. W. Matthews, of Lincoln, Neb., plans to build a garage on 10th street; it will represent an expenditure of $12,000.

Edgar Vernon, of Atlanta, Ga., plans to open a garage and accessory store; he has secured a location on Harris street.

The Bloomington (Ill.) Garage, Supply & Storage Co. has opened for business; it is located at Douglas and Prairie streets.

Epley & Weert have opened a garage and repair-shop in Grand Rapids, Mich. It is located at the rear of the Waverly Hotel.

The Cartercar Iowa Co., of Des Moines, Ia., has been granted authority to build a garage on Locust street; it will cost $10,000.

The Culbertson-Grote-Rankin Co., of Spokane, Wash., has purchased a garage on Knox avenue; it will enlarge it and locate there.

R. C. Manning, proprietor of the Motor Shop in Trenton, N. J., has become a car dealer; he will handle Overlands after January 1.

Gregory Garage is the style of a new structure being erected in Englewood, N. J., on Grand avenue; the estimated cost is $15,000.

The Bronx Gas & Electric Co., of New York City, plans to build a garage at Walker and Frisbie avenues; the estimated cost is $3,000.

Frank J. Martin is erecting a garage and repair-shop in Greenfield, Mass., on Davis street; he will style the business the Martin Machine Co.

The Dorris-Crawford Co. has entered the trade in Chicago, at 1621 Michigan avenue; it will handle Dorris cars and trucks and Selden trucks.

Harry W. Snyder, of Cincinnati, Ohio, has leased for nine years the Peerless Garage; it is located on Woodburn avenue, south of Myrtle avenue.

Plans have been prepared for a garage to be erected in Utica, N. Y., for George Fullmer; it will stand on Genesee street and will cost $6,500.

The Universal Auto Sales Co. has opened salesrooms in New York City at 1700 Broadway; the company will specialize in used cars and trucks.

C. L. Brown, of Birmingham, Ala., has taken possession of new quarters at 219 South 20th street; he stocks Stevens-Duryea cars and Chase trucks.

B. G. Holmes and George Ress, of Redlands, Cal., have leased the Mission Garage to George M. Bartlett, formerly of Detroit; it is locatetd on Vine street.

D. D. Freese, of Gardner, Mass., has leased the garage of A. Rosenberg, on North Main street; he will add additional equipment and operate the garage.

Z. P. Eagleston and A. B. Shanks are preparing to open a garage and repair-shop in Smithville, Tex., on 2nd street; it will be styled Smithville Auto & Machine Co.

The Independent Auto Co., of 11th and Mulberry streets, Des Moines, Iowa, has been taken over by M. Gerhart; the company is Locomobile and Moline dealer.

Charles C. Case has purchased the Nolan Auto Co., of Rochester, N. Y. The style will be changed to Case Auto Co. The company handles Studebaker and Rambler cars.

The Schenectady (N. Y.) Cadillac Co. has taken possession of a new garage at 422 Smith street; it has a frontage of 40 feet and is 133 feet deep. B. W. Peebles is manager.

Holland & Co. have opened a garage in Lead, Col., at 114 East Main street; Holland formerly was connected with the Black Hills Garage in Deadwood, in the same State.

Vaccaro & Fargo, of Modesto, Cal., have sold their interest in the Modesto Garage to A. W. Bereaux, formerly of San Francisco; they, however, will continue as Regal dealers.

The Ennis-Klink Oil Co. has been formed in Milwaukee, Wis., with a capital of $7,000 by Eugene Klink, Joseph Ennis and A. A. Shead; it will deal in oils, greases and motor fuels.

G. and E. Tisch, constituting the firm of Tisch Bros., in Grand Rapids, Mich., have entered the tire trade; they will stock the Federal line. Their store is located on Davidson avenue.

E. R. Gardener, formerly of Davenport, Ia., has purchased a controlling interest in the Western Auto Co., of Denver; he has removed to that city and will take an active part in the business.

J. D. Perry Lewis, a pioneer salesman in the trade in St. Louis, Mo., has become a dealer; he has secured the Marion agency and will open salesrooms at Walton and Washington avenues.

Frank G. Bell, of Hollon & Bell, under-

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takers, has purchased the garage of the Syracuse Storage Battery Co., in Syracuse, N. Y., at 118-20 South State street; it will be operated by Bell's son, Paul H.

The National Motor Car Co., of Chicago, has changed its name to Divine Motor Car Co. The personnel remains the same and the company will continue to stock Garfords; F. C. Divine is president.

W. A. Wicks, of Seattle, Wash., has taken possession of a new concrete salesroom and garage at 12th avenue and East Union street; the showroom has a frontage of 60 feet on 12th avenue and 40 feet on East Union street. Wicks is a Franklin dealer.

A. B. Larmour, of Plainfield, N. J., has taken possession of new quarters at 119 Madison street; he now styles his garage and repair business the Central Garage. He formerly was located at 180 East Front street.

H. S. Neer has opened a garage and repair-shop, 50 x 200 feet, in Birmingham, Ala., at 109 South 20th street; he formerly resided in Dayton, Ohio, and went to Birmingham in July of this year to become connected with the Huster-Overland Co.

E. H. Kammerer has purchased from Charles Perrault the Coeur d'Alene Garage, in Coeur d'Alene, Idaho; Perrault, who retains his bicycle agency and repair-shop, has taken a new location across the street. With the garage goes the Ford agency. Kammerer formerly resided in Spirit Lake, in the same State.

Frederick C. Hamerson, of Grand Rapids, Mich., has sold his interest in the Mitchell Auto Agency & Garage, at 210 Ionia avenue, to his partner, John Vlasbloom; the latter will continue the business. Haumerson will return to the repair department of the Mitchell-Lewis Motor Co., in Racine, Wis., where he formerly was employed.

John D. von der Leith, for five years connected with the Splitdorf Electrical Co., Newark, N. J., has entered the trade for himself; he has formed the Reliable Auto Specialty Co., with headquarters at 306 Mott avenue, New York City, and will handle accessories, specializing in ignition devices and materials. He plans to tour the country in a car, demonstrating the lines he handles.

The Cooperative Auto Co. has been formed in Norwich, Conn., with a capitalization of $50,000, $10,000 paid in; the officers are: President, M. H. Donahue, of Baltic, Conn.; vice-president, R. J. Jodoin, of Baltic; secretary and treasurer, P. A. Quinn; manager, John A. Allen. Besides these the incorporators include John Quinn and John H. Brown. The company will operate a garage with car and truck agencies.

CHAMBER EFFECTS CUTS IN MOTOR CAR FREIGHT RATES

Reduction of from 5 to 16 per Cent. in Transcontinental Tariffs—New Arrangement Scheduled in Southern Classification.

Freight rate reductions ranging from 5 to 16 per cent. on transcontinental shipments of automobiles have been secured by the Automobile Chamber of Commerce on carload shipments ranging from 11,000 to 22,000 pounds and, likewise, reductions have been secured on commercial vehicles from the pleasure car rating, the reduction being according to a fixed differential.

In securing these rates the Chamber asked certain concessions and the result was a compromise. On delivery wagons, trucks or chassis and extra parts, finished or unfinished, but not including extra windshields, lamps, searchlights, headlights, speedometers, cyclometers and horns, in minimum carload weights of 12,000 pounds for 36- and 40-foot cars and 14,000 for 50-foot cars, the chamber asked: Group A, $2.65; B, $2.60; C, $2.52; D-J, $2.45. The railroads granted rates for the four classes of $2.80, $2.70, $2.60 and $2.50, but did not include delivery wagons with enclosed tops and made the weights: 36- and 40-foot cars, 12,500 pounds; 50-foot cars, 15,000 pounds. The original rates were: $3.30, $3.20, $3.10 and $3.

The present classification, which reads "Automobiles, passenger and freight," has been amended to include fire-fighting apparatus, hearses and tractors. The reductions, taking Detroit to San Francisco as an example, are:

Weight. Lbs.	36 ft. or 40 ft. Car. Present Charge.	36 ft. or 40 ft. Car. New Charge.	50 ft. Car. Present Charge.	50 ft. Car. New Charge.
10,000	$310.00	$310.00	$372.00	$372.00
10,484	325.00	325.00	372.00	372.00
10,486	325.07	325.00	372.00	372.00
11,000	341.00	325.00	372.00	372.00
12,000	372.00	325.00	372.00	372.00
12,500	387.50	325.00	387.50	387.50
12,582	390.04	327.13	390.04	390.00
13,000	403.00	338.00	403.00	390.00
14,000	434.00	364.00	434.00	390.00
15,000	465.00	390.00	465.00	390.00
16,000	496.00	416.00	496.00	416.00
18,000	558.00	468.00	558.00	468.00
20,000	620.00	520.00	620.00	520.00

In the Southern Classification new rates have been established which will make freight rates one class lower than at present on carloads of chassis or open-bodied trucks. Other changes are:

A lower charge for 11,000 pounds in 36-foot cars than now charged on 10,000 pounds; a lower charge for 13,750 pounds in 40-foot cars than now charged on 12,500 pounds; a lower charge for 19,800 pounds in 50-foot cars than now charged on 18,000 pounds, and the privilege of shipping engine or gear parts and wheel rims or channels in carload lots of either passenger or freight machines as part of the carload instead of being subject to additional less carload charges.

Seitz Becomes Detroit Wyandotte.

The Seitz Automobile & Transmission Co., of Wyandotte, Mich., which in January of this year purchased much of the machinery of the Grabowsky Power Wagon Co. at the receiver's sale, has been reorganized with $500,000 capital under the style Detroit Wyandotte Motor Co. and now is actively engaged in the production of commercial vehicles which bear strong resemblance to the old Grabowsky trucks. Frank Marx, a Wyandotte brewer, is president of the new company, and associated with him are J. C. Kern, who is secretary-treasurer; G. A. Horner, formerly with the Grand Rapids Motor Truck Co., and later in charge of the Grabowsky plant for the receivers, is general manager. The truck, which differs from the Grabowsky in that it has a stationary power plant instead of a removable one and that it has the radiator behind the engine, has been named the Horner.

Reorganization Planned for Muncie Gear.

If the efforts of a loyal group of creditors and stockholders prove successful, it is not unlikely that the Muncie Gear Works, of Muncie, Ind., which three weeks ago was placed in the hands of a receiver, will be reorganized and that the business will be carried on as heretofore under the old management. It is stated that the plan of the organization calls for an issue of 5 per cent. preferred stock, retirable at given intervals, to liquidate the $275,000 indebtedness of the firm. It is thought that this plan will appeal much more strongly to the creditors than will the alternative of getting approximately 10 cents on the dollar, which, it is pointed out by officials of the company, is all that would result from a forced sale.

Great Western's Creditors to Meet.

Creditors of the Great Western Automobile Co., of Peru, Ind., have called a meeting for the purpose of arranging an extension of time for the automobile company which, it is stated, has been placed in financial straits because of a lack of orders during the last few months. About 130 cars are on hand which, if sold, will furnish the required funds.

The Simplex Specialties Co. has been organized in Detroit with John B. Teford in charge. He will have an office in a garage at 703 Woodward avenue and will handle the Green top lifter and other accessories.

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MOTOR WORLD

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A. B. SWETLAND, President and General Manager
F. V. CLARK, Business Manager.

EDITORIAL DEPARTMENT
R. G. BETTS, Managing Editor
S. P. McMINN HOWARD GREENE
R. W. SHERMAN

ADVERTISING DEPARTMENT
BROCK MATHEWSON, Manager
New York Office
1600 Broadway
HOWARD L. SPOHN LOUIS R. SMITH O. H. ADAMS

Western Office
1001 Ford Bldg., Detroit, Mich.
W. H. TRIPP, Mgr.

Detroit
1001 Ford Bldg.
MAXTON R. DAVIES

Cleveland
610 Superior Ave. East
C. H. HANDERSON

Chicago
Room 510 Harvester Building
606 South Michigan Avenue
H. A. WILLIAMS

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POSSIBILITIES OF PORTABLE GARAGES.

Whether or not the cyclecar ever "comes in" in the sense that the automobile and the motorcycle may be said to have "come in," the increasing number of really small cars suggests anew the advantages that lie in the portable garage, to which comparatively little attention has been paid. It is pointed out by those who would popularize little vehicles either in or nearly in the cyclecar class, that they may be "housed under a tarpaulin in one's backyard." That is not good advice, for though some one or other is credited with having stolen a red-hot stove, the fact remains that it is the little things that are most easily filched, and the size and weight of such small cars stands as a permanent and decidedly strong inducement to the light-fingered—or,rather, light-handed—gentry to make off with them.

It is here that the first possibility of the portable garage makes itself manifest, for at the expense of a small initial outlay any car, whether it is small or large, can be put beyond the reach of all ordinary thieves; and furthermore, the old saying to the effect that out of sight is out of mind still obtains. It is true that one so minded might be able to get into one of these light metal shelters with a can-opener, but it would have to be a pretty big can-opener and burglars, as a rule, don't carry such evidences of domestic simplicity about with them, though in time they may add these tools to their "kits."

The advantages of the private garage have been too often pointed out to require reiteration—elimination of garaging fees; safety from unauthorized meddlers, or riders; convenience; reduction of fire risk, and a host of others that are far too numerous to mention. Ordinarily, the mere term "private garage" indicates a certain affluence, wide spaces and rolling lawns with a gem of architecture hiding among luxurious trees; its cost is looked at askance by the average individual whose income is anything under $5,000 a year; it is almost, if not quite, beyond his means. Not so the small portable garage, however. As a shelter it is every bit as good as any masonry edifice founded on rock. And, needless to point out, its cost is a trifling fraction of the cost of the other; it can be put up almost by anyone, and once up it will stay put up until the owner changes his residence, when it can be packed up and carted away with the furniture. It is just a little bit surprising that greater attention is not paid to its possibilities, not alone by the car owner but by the dealer as well, for the fact of its existence and its availability might well be used as a lever in turning sales, especially to those who buy moderate priced cars.

DANGER IN CURVED GLASS WINDOWS.

It is essential, in building enclosed cars to meet with the approval of present-day purchasers, that there should be as much clear glass and as little to obstruct the view as possible, especially in the front. It also is important, though in a different way, that such a vehicle should be of attractive appearance, for even a good car, if it is not good to look at, will be hard to sell. No doubt these reasons are responsible for the fact that a number of cars, more particularly electrics, are built with fronts of curved glass. True, the curved glass front affords a splendid view and in many respects is pleasing to the eye; but there is another aspect of the case that requires at least as careful consideration as such matters as unobstructed vision and handsome appearance.

The fact is that, while curved glass does not actually obstruct the view, it has an effect that is even more objectionable, for, acting as a sort of lens, it is likely to distort objects, destroy proportions and optically falsify distances. It is not possible to make allowances for such effects, for they vary with every variation of the observer's position, and no one likes to look out and see passing objects take on forms that more or less resemble those produced by a Coney Island curved mirror, the principle of which, incidentally, is embodied in the curved glass front of the automobile.

While it is quite true that glass is more or less transparent, it is only necessary to give it a curved form, or even merely to set it at an angle, to discover that it has optical qualities which, while of incalculable value in making possible the construction of lenses of all sorts, are decidedly out of place in a window that has no reason for existence other than to form a barrier to the weather but not to the vision of passengers.

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PREVENTING CARELESSNESS BY ADHERING TO A SYSTEM

Member of Ford Organization Urges that Employes Be Guarded from Temptation—Slackness in Manager Imitated by the Force.

"If employes are allowed to handle business transactions in a careless manner, that carelessness may grow into practices that are questionable," says N. A. Hawkins in the Ford Sales Bulletin.

"Unless employers protect their honest employes against those who might be dishonest if they dared, and protect all of their employes against the temptation to be dishonest, they are not treating themselves or their employes fairly. All employes should be compelled to work close enough to a system to keep them out of unnecessary temptation. Unless this is done, you can expect that some of them will learn bad tricks.

"About the best plan to prevent losses of loyalty, losses of ambition, losses of character, losses that arise from a suspicious and disorganized force of employes, is to compel every one of them to record their transactions. To be successful—to avoid carelessness, you must have a clear and well-defined system and follow it to the letter—and see to it that all of your employes do likewise—thus operating your entire business to its maximum efficiency and with little likelihood of loss through any other than legitimate ways.

"Employes will imitate the faults of their employer quicker than they will imitate his virtues. If the manager is slack—the employes will be even more slack.

"Carelessness is catching.

"Questionable practices are contagious.

"This is the record of many a failure."

Couldn't Enter Race; Wants $100,000.

How many jeers is $100,000 worth? Ask Ferd L. Adams, who was entered to drive a Smada (Adams backwards) car in the last Indianapolis Speedway race, for Adams has commenced suit for that amount because of his inability to start in the 500-mile grind. Hs asks that sum from the Automatic Motor & Engineering Co., of 15 South Michigan avenue, Chicago. Adams claims he engaged the company in February to build a special 90-horsepower racing car for him, to be delivered May 1. May 10, he states, the car was not completed and he tried to get another mount but failed. His picture was printed in the programs and he had paid $100 entry money, but he was unable to find any kind of a car in which to start. Because of this he says he was ridiculed by his friends and suffered great mental anguish for which he wants the Chicago company to furnish balm.

Hub Odometer Added by Stewart.

To its extensive line of speed and mileage indicating and recording devices, the Stewart-Warner Speedometer Corporation of Chicago, Ill., just has added another that is designed primarily to afford the operators of commercial vehicles and electrics, which ordinarily are not equipped with the usual type of speedometer, a permanent record of the mileage traveled by the vehicle to which it is attached; as the accompanying illustration shows, it is a hub odometer, though the picture does not show the insides of the device which, of course, is its most important part. As accuracy is



STEWART HUB ODOMETER

essential in any device of the kind, the drive in the new instrument is through steel pinions with worm and spiral gears, and all the parts are heat treated, hardened and ground to make them practically wear-proof. To prevent the dials "jogging" around miles that have not been run by the wheels, an ingenious adaption of the Geneva stop is used and this positively locks the indicating figures, except at the instant they register; those not registering remain locked. Another excellent feature of design is that the instrument is absolutely springless; furthermore, there are neither pawls nor ratchets.

Yosemite Park Opened to Automobiles.

After a long squabble, the Interior Department of the Federal government at length has thrown open a part of the Yosemite National Park to automobiles, though motorcycles still are barred out. Motorists may enter only over the Coulterville and Big Oak Flat roads, and as a means of regulating the speed of vehicles checking stations have been established. For the round trip through the park a fee of $5 is made.



*Indicates Sanction by A. A. A.

Aug. 29-30, Chicago, Ill.—Elgin Road Race Association's road races, under auspices of Chicago Automobile Club.*

Aug. 30-Sept. 2, Seattle, Wash.—Automobile Club of Seattle's Grade III reliability contest.

Aug. 30-Sept. 6, Chicago, Ill.—Reliability tour of the Chicago Motor Club.

Aug. 31, Oceanside, Cal.—Beach races.*

Sept. 1, Davenport, Iowa.—Track racemeet under auspices of J. Alex. Sloan.

Sept. 1, Columbus, Ohio—Columbus Automobile Club's track racemeet.

Sept. 1-2, Sioux City, Ia.—Sioux City Automobile Club and Speedway Association's track racemeet.*

Sept. 1-5, Houston, Tex.—Houston Automobile Club's Grade III reliability contest.

Sept. 6, Hamline, Minn.—Minnesota State Fair Association's track racemeet.

Sept. 8-13, Chicago, Ill.—Chicago Motor Club's Around Lake Michigan reliability tour.*

Sept. 9, Corona, Cal.—Speedway track races, under auspices of Corona Automobile Association.

Sept. 12, Canfield, Ohio—Canfield Fair Association's track racemeet.

Sept. 13, Covington, Ky.—Cincinnati Automobile Club's track racemeet.*

Sept. 13, Grand Rapids, Mich.—Grand Rapids Automobile Club's track racemeet.

Sept. 14, Seattle, Wash.—Kings County Fair Association's track racemeet.

Sept. 18, Asheville, N. C.—Asheville Automobile Club's hill climb.

Sept. 20-21, Detroit, Mich.—Track racemeet under auspices of Michigan State Fair.

Sept. 27, White Plains, N. Y.—Track racemeet under auspices of Geo. T. Long.

Sept. 27-28, Bakersfield, Cal.—Kern County Fair Association's track racemeet.*

Oct. 3, Trenton, N. J.—Inter-State Fair Association's track racemeet.

Oct. 3-4, Oklahoma City, Okla.—Oklahoma State Fair Association's track racemeet.

Oct. 10-17, Paris, France—Annual automobile salon.

Nov. 2-3, Los Angeles, Cal.—Los Angeles to San Diego to Phoenix road race.

Nov. 4-5, El Paso, Tex.—El Paso Automobile Club's road race between El Paso and Phoenix, Ariz.

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PIERCE-ARROW PRODUCES 2-TON WORM DRIVEN TRUCK

Design of Big Truck Closely Followed in Latest Model—Improved Suspension and Automatic Governor for Motor.

Something akin to a real surprise has been "sprung" by the Pierce-Arrow Motor Car Co., of Buffalo, N. Y., in the announcement just made that a 2-ton worm-driven truck has been developed and will be ready for delivery early in September. While it is a matter of much difficulty—in fact, a practical impossibility—to design a machine from the ground up, complete an experimental model and keep it on the road for a considerable time, as the Pierce-Arrow people have done with the new truck, without more or less spreading of an inkling of what is going on, there has been little general idea that there was a medium-weight worm-driven truck coming from the Buffalo factory.

In view of the highly satisfactory service that has been obtained from the Pierce-Arrow 5-ton truck, which, as is well known, was among the first American commercial vehicles to adopt worm drive, it is not without substantial reason that the same principles of construction and practically the same lines have been adapted to the needs of the smaller car. In fact, the latest comer may be termed a smaller edition of the big machine without stretching the truth to any appreciable extent. At the same time, the opportunity has been seized to incorporate a few improvements that experience has indicated as desirable, as well as a few constructional changes due to the difference in the sizes of the machines.

A case in point is that of the motor and gearset suspension. In the big truck the motor is hung from three points, one in front and two in the rear, from cross-members of the main framing; in the 2-ton truck, however, the motor, though retaining the three-point suspension idea, is hung differently. The motor and the gearset are rigidly bolted to a rigid steel subframe, and this, in turn, is mounted on three points on the main frame. The result is that the motor itself is perhaps somewhat less exposed to localized stresses, and the protection from twisting is complete.

As for the engine itself, it is, as might be expected, a thorough Pierce-Arrow motor. It has four cylinders, cast in pairs, of the T-head type, and, with a bore and stroke of 4 inches and 5½ inches, respectively, has a rating of 25.6 horsepower, though its actual capacity is 30 horsepower at 1,000 revolutions per minute. An automatic governor holds the engine speed down to a maximum of 1,050 revolutions per minute, which, with standard gearing, corresponds to a road speed of 16 miles an hour. All the valve mechanism is made by exactly the same processes and on the same lines as in the motor of the 5-ton truck.

While it is usually taken as a matter of course that a truck maker will be a little extra careful in the designing of his lubrication system, the Pierce-Arrow company has gone even further than the stereotyped "might be expected" in the new motor. The rotary pump that circulates the oil is directly coupled to one of the camshafts, and is of unusually large size and takes oil, in the usual manner, from a well in the bottom of the crankcase. Oil is delivered under pressure from the main tube lead to the three crankshaft bearings, whence the oil passes, through holes drilled in the crankshaft, to the connecting-rod big-end bearings. The spray of oil splashed by the connecting-rods and crankshaft is relied upon to lubricate the camshaft, piston pins and cylinder walls; the surplus, of course, falls to the bottom of the crankcase and finds its way to the well to be strained and recirculated.

With the exception of two tubes, one of which leads to the pressure gauge and relief valve on the dash and the other of which is the return pipe, all the oil passages are inside the crankcase, so that if a leak should develop the dripping oil will merely fall into the well, and will not be lost or spread in a messy smear over the engine. There are but four outside oil-pipe joints. A float-operated gauge indicates the level of the oil in the well.

Gas is supplied to the motor by a regular Pierce-Arrow automatic carburetter, slightly modified to meet the requirements of this particular machine; throttle control is through a foot accelerator. For the sake of simplicity, but a single ignition system has been installed, and particular pains have been taken to render this as reliable as an ignition system can be made. The time of ignition is fixed. The Bosch magneto sends its current to the spark plugs through wires clipped in fiber blocks and run through the air, away from contact with possible grounds. Special sockets over the pistons are provided for the spark plugs. Water is forced through the vertical tube radiator by a centrifugal gear-driven pump of large capacity.

The clutch is a large, leather-faced cone and the gearset provides three speeds which are selectively controlled through a lever placed at the right side of the car. The gears are designed to propel the car at 4, 8 and 16 miles an hour, respectively, for the first, second and third speeds, the highest being a direct drive and the maximum speed controlled, as already has been stated, by an automatic governor. The reverse speed is 3½ miles an hour. The propeller shaft which bridges the gap between the gearset and the rear axle is fitted with two universal joints, one at each end.

The rear axle follows closely the lines of the rear axle of the 5-ton machine, and is of the floating type with the overhung worm enclosed in a tight and particularly rigid steel casing. The live shafts, of course, carry no weight load, serving merely to transmit power to the wheels; they are extremely heavy, so that the margin of safety is more than ample for all requirements. As in the larger machine, the springs are not depended upon to transmit drive to the body; two radius rods are provided for the purpose, and they run forward at right angles to the axle and terminate at heavy brackets riveted to the main frames.

Adhering to the theory, which has been well demonstrated in practice by the big trucks, that a flexible frame has peculiar advantages for motor truck work, the frame of the 2-ton machine has been constructed so that it is free to give more or less when the truck is running over uneven ground, so avoiding not a little strain on the fastenings. It goes without saying that the entire design is laid out to harmonize with this flexibility of frame, and that the material used is adapted to the work; special steels, heat treated, provide the requisite qualities. The springs are all semi-elliptics, of unusual length, and the rear springs, inasmuch as they transmit no driving power, are shackled at both ends. As in the big car, the front axle is a one-piece forging and the steering gear is of the worm-and-nut type, of very heavy construction. The steering wheel is at the right side.

All the wheels are of wood, all are 36 inches in diameter and all are shod with 4-inch solid tires, there being two tires on each rear wheel, however, as against one on each front wheel. The tires are on S. A. E. standard demountable rims. The standard wheelbase is 150 inches, and the tread is standard—56 inches.

The braking system consists of the usual two units—service and emergency brakes. The service brake, operated by a pedal, consists of a band and drum mounted immediately in the rear of the gearcase; the emergency brake, with the customary lever control, includes a pair of internal expanding shoes working in drums on the rear wheels.

Bearings throughout the truck are either ball or roller, with the exception of the engine bearings, and the lubrication problem has been simplified by eliminating grease cups and the like and employing self-lubricating bearings where it is possi-

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ble to do so. All bearing surfaces are made large and are fitted with particular care, so that there will be a good working fit from the beginning and the least possible loss of service due to the "bedding down" process.

The gasolene tank, which feeds fuel to the carburetter by gravity, has a capacity of 15 gallons. The water capacity of the car is 8 gallons and the oil capacity 1 gallon. The radiator is of the tubular type, with vertical tubes, and is of particularly substantial construction, a point that is of much importance in truck work, where a flimsy radiator is sure to give trouble early, make the life of the driver miserable and reduce the efficiency of the truck, even if it is not damaged through the loss of water and the consequent overheating of the engine.

The over-all length of the chassis is 18 feet 6 inches and the extreme width 5 feet 6 inches. The body, in its standard form, is 10 feet 6 inches long and 6 feet wide, and its upper surface stands 3 feet 6 inches from the ground. The top of the frame is 30 inches from the ground; these measurements are taken without load on the machine. The frame is 34 inches wide. The load capacity of the truck is given as 5,200 pounds, this figure including the weight of the body. In other words, 1,200 pounds is the weight allowed for the body if the full paying load of 2 tons is to be carried; if the body is lighter the load may be correspondingly heavier, but if the body exceeds 1,200 pounds the excess must be deducted from the paying load. The price of the chassis, in the lead, is $3,000 f. o. b. Buffalo.

Martin Tractor Enters Massachusetts.

Virtually to take the place of the Martin Tractor Co., of Indiana, which was formed about a year ago with $350,000 capitalization, there has been formed in Springfield, Mass., a new company of the same name and with the same capitalization, of which Harry C. Fisk of the Fisk Rubber Co. is president; C. H. Martin is vice-president; E. O. Sutton, also of the Fisk Rubber Co., is treasurer, and C. E. Beckwith is secretary. The incorporation of the company marks the entry of S. E. Eveland, of Philadelphia, into its affairs, Eveland being one of the largest stockholders and bringing with him a number of valuable patents. Coincident with the formation of the company, which holds all rights to produce tractors under the Martin and Hunter patents other than those held under license by the Knox Automobile Co., of Springfield, Mass., a letter warning against infringement has been sent out. The patents listed in the letter, which it is pointed out "is not a specific allegation that you are infringing these patents but is merely in the nature of general information for the trade," are as follows: Hunter, 670,405, March 19, 1901; Hunter, 696,143, March 25, 1902; Hunter, 625,953, May 30, 1899; Thayer, 678,063, July 9, 1901; Martin, 1,018,248, February 20, 1912; Hight, 698,836, April 29, 1902; Lieban, 655,724, August 14, 1900.

To Produce "Double" of Bedelia Cyclecar.

To produce a cyclecar that will be the "spitting image" of the French Bedelia car, a company to be styled Davis Cyclecar Co. now is in process of formation in Detroit. The company is named for William Norris Davis, formerly with the Murphy Potter company, and will be capitalized at $500,000. It is planned to turn out between 3,000 and 5,000 cars during the coming year. The car will have 93 inches wheelbase, 36-inch tread and its seats will be tandem arranged, a la Bedelia. Power will be furnished by a special Spacke motor and transmitted through a three-speed gearset; wire wheels will be used and the car will weigh less than 600 pounds; it will sell for $395.

Another Cyclecar Company for Detroit.

The Princess Cyclecar Co., which has been incorporated under Michigan laws with $200,000 capital by Isaac N. White, H. H. Dawson and C. J. Thornewill, is the latest addition to the increasing number of companies that expect to produce light vehicles. An office has been opened in the Dime Savings Bank building in Detroit and negotiations for a factory have been opened. Also interested in the company, which will produce a true cyclecar to sell for $375, are J. A. Martin, formerly of the Oakland Motor Car Co.; E. H. Vincent, formerly with the Packard, Hudson and Regal companies, and H. L. Blydenburgh, formerly with the Buick company.

Reeves Negotiating for Mais Plant.

Headed by M. O. Reeves, who is head of the Reeves Pulley Co., of Columbus, Ind., and the Reeves Octoauto Co., a group of Columbus business men is understood to be conducting negotiations for a controlling interest in the Mais Motor Truck Co., which in July, 1912, was placed in the hands of a receiver. If Reeves's plans materialize, it is his purpose to move both the plant and the business to Columbus, Ind. The names of Reeves's associates have not been made public.

Wager to Produce Worm-Drive Truck.

For the purpose of manufacturing and marketing a 1½-ton worm-driven commercial vehicle, which already is so far advanced that it has reached the testing stage, the Aetna Motor Truck Co. is being formed in Detroit, Mich., by J. G. Wager, formerly owner and operator of the Trebert Gas Engine Co., of Rochester, N. Y. The truck, which is to sell for about $2,000, is to have a Hazard four-cylinder motor, Ross steering gear, Sheldon axles, Brown worm gear and a Brown-Lipe gearset.

Detroit Body not to Have Distributer.

Despite statements to the effect that the Detroit Body Co., of Detroit, successor to the Detroit Carriage Co., has arranged to have its entire product marketed by an independent distributer, it is stated by President H. W. Paten the company has no such intention and that it will continue as heretofore its own distributer; the man whom rumor had named as the marketer of the body company's products is Theodore F. Millington, formerly with the General Motors Co. and an organizer of the Edward J. Budd Mfg. Co., of Detroit.

More Trucks Coming from Indianapolis.

The Kugel Auto Co., of Indianapolis, Ind., which heretofore has conducted a machine shop and paint works, is preparing to commence the production of commercial vehicles of its own and has arranged to take up the manufacture of a vehicle styled Auglaize, which previously has been produced in limited quantities in New Bremen, Ohio. For the purpose, a new building 80 x 175 feet will be erected. The truck will be renamed Kugel.

Gain of $1,400,000 in Pope Sales.

Although the Pope Mfg. Co., of Hartford, Conn., has not yet completed its annual statement, the fiscal year which terminated July 31 is understood to have yielded a gain of $1,400,000 in gross sales; of this $500,000 came from the bicycle and motorcycle end of the business and the remainder from automobiles.

Indian Sues Utica Man for Bill.

The Indian Refining Co. recently filed suit in the Supreme Court for New York county against F. S. Worden, of Utica, N. Y. It is claimed that he was supplied with goods to the value of $51.75 between November 22, 1912, and February 1, 1913, and has failed to pay for them.

White's Boston Branch in New Home.

The Boston branch of The White Co., of Cleveland, Ohio, has taken possession of new salesrooms and a service station at 930 Commonwealth avenue; formerly it was located at 320 Newberry street; J. S. Hathaway is manager.

In order to be in closer touch with the automobile industry, the Pettingill Machine Co., of Amesbury, Mass., which manufactures bodies, has opened a branch at 603 Boylston street, Boston. It is in charge of D. M. Roney.

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"My Best Sale and Why I Regard It as My Best"

Getting a Physician's Order After He Had Emphatically Turned Down the Salesman and Said He Would Buy Another Make—Courtesy to a Late Evening Caller Which Resulted in a Sale by a Man Not a Salesman.

By C. C. HALL, Danville, Ill.

The hardest sale I ever made was the sale of a 1913 model five-passenger touring car. The purchaser was an influential doctor who was known to be wealthy; he was a critic and a genius, and a man generally credited with the ability properly to judge an automobile.

He already had a car, though it was a rather decrepit one, and it was his habit to drive to his office every morning, leaving the car unattended at the intersection of two very busy streets in the downtown section of the city, where all day a continuous stream of people passed. It was this habit of his of leaving the car in such a prominent place, coupled with his own prominence, that influenced me to exert myself to the utmost to make the sale, for its advertising value to me would be considerably greater than the profit in mere dollars and cents on the sale of the car.

I had approached him several times on the subject of a 1912 car, but he did not warm up to it. In fact, he turned me down rather hard and I commenced to get discouraged. He pointed out that, while he wanted a car, he had practically determined to purchase a much higher priced one than the make I was selling. He had even gone to the length of getting photographs and specifications of the car he proposed to buy and things looked rather black for me. I remember the last time I called on him he did all, or near all, the talking. He would have made a wonderful salesman. I think if I had been in the market for a car he could have sold me the one he himself was going to purchase, or said he was going to purchase; he had all its fine points down pat, and the way he pointed them out to me made me wish for a chance to get away and terminate the interview.

There probably is not a salesman within the automobile, truck or accessory trade who does not treasure in his memory a sale which to him gave satisfaction when he got the signature at the bottom of the contract. If you have ever made such a sale write it and mail it before September 1. Your name will not be used if you so request. For the best four Motor World offers awards of $30, $20, $15 and $10.

At last he intimated that I might go and that, as far as he was concerned, it could serve no useful purpose for me to call again. All of which I reported to my employer, who also was inclined to think that further visits to the doctor would be a waste of time. But I had other views on the subject; I had determined to sell the man my car, and I calmly "sat tight" until the 1913 catalogs came through from the factory. When I got them I studied them until I knew them by heart; I got every detail of improvement in my mind's eye and also at the tip of my tongue.

Then I called on the doctor again and, though I was carrying the previous disappointment as a heavy load he never knew it, for I kept my feelings well concealed. Four times I missed him, but on the fifth trip, made in the evening, I found him in his office and alone; it was fifteen minutes to nine.

His greeting was not calculated to induce enthusiasm. "Good evening," he said; "I suppose you want to talk automobile, but I haven't time."

"No, doctor, and yes," I replied. "I was only going to offer you an opportunity to save from $1,000 to $2,000, and it won't take 10 minutes to do it if you will only give me a chance to talk. I know you have made a lot of money in your life, but I don't think you ever made that amount in such a short time."

This seemed to anchor in the gentleman good and strong. He was interested immediately, and that gave me the opening for which I was looking. I sprung the 1913 specifications and described the car, its quality, power and beauty, and before I had gotten very far along I knew I had him.

To make a long story short, inside of an hour I had his signature to the order blank and his check for $100 in my pocket. Nor was that all. Not only did I sell him a car, but I sold him slip covers for it, a bumper, a trouble lamp and two extra tires, and when I left—in the doctor's old car—we were friends; I was smoking one of his cigars. The old car, which we took in trade, was put through our shop and sold at a profit a little later. All of which goes to show that persistence coupled with a sales campaign generally can be relied upon bring in the business.

By WM. J. HASTINGS, Cleveland, Ohio.

One evening last summer I was taking inventory of stock, when about 9 o'clock I was ready to go home, a stranger stepped into the stock room.

My first impulse was to tell him to "beat it!" as I was tired out and in no mood to listen to a hard luck story, as I surely though would be the case. But I changed my mind and said, "Good evening." He replied likewise, and asked if I could show him something about an electric car.

After displaying one of our cars, he called his wife and two children, who had been standing at the back of the garage, to come and look it over; they liked it very well and asked some questions, which I answered to the best of my ability, although I was not on the sales force and could have asked him to call in the morning or told him we would have one of the salesmen call and see him.

However, I got them interested and took them for a ride, although it was after 10 o'clock, and set them down at the hotel where they were to stay, for they had come in late from the country and had left their machine at a nearby garage for the night.

Next morning the M. D., as I afterward learned he was, came in and looked over the machine in daylight to see if it confirmed his opinion of the night before; it did so, and before he left the office I had his order for the car and a charging plant which I had recommended.

Within a week I had delivered the car and plant to his home town, some 60 miles away, and come back with the money. He now very often comes in to get advice and information, and is very much pleased.

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STUDY OTHER MEN'S METHODS

Keeping Posted on the Whole Trade a Secret of Success in Every Business—"Doctor" Tells How Business Illness May Be Avoided.

"One of the secrets of good business is to keep both yourself and your employes posted on what other people in your line in different parts of the country are doing. I have no use for the 'shut-in'; I refer to the dealer who resolutely closes his eyes to the advancements and improvements made by others in the same line of business, and keeps on doing this the same old way; no change, no improvement." Thus spake a man who has made a big success and has had manifold opportunities of seeing how other people did things or left them undone.

Has "Pulled Up" Many Sick Enterprises.

The man was in a sense an "efficiency expert," though he did not call himself by that title. He was simply known as the competent officer of a very successful trust company. In his career he has administered estates, closed out businesses, acted as receiver, and in many cases has been engaged at a very substantial figure to put "weak" and "consumptive" business on its feet.

He was thinking particularly of those businesses which might be called unhealthy. Continuing, he said: "If I were a dealer or a manufacturer, I would send trusted employes out to find out how successful concerns in my line in other localities did things. What automobile manufacturer could fail, for example, to learn something of value from a study of Ford methods and shop practice? Let him take a week or two visiting other shops; in most cases he would be welcomed. The right sort of manufacturers have few secrets; they are glad to be able to contribute information and ideas that tend toward the stability and upbuilding of the industry. Time and again we have been called in to handle affairs where there would never have been any need for our services if those in charge had availed themselves of the wide-open opportunities for learning better ways.

Garner Ideas from Successful Concerns.

"As a dealer I would be sure to get inspiration and ideas from the methods and plans worked out by notably successful New York concerns like Carl H. Page & Co., Elliott-Ranney, Colt-Stratton, or any of the successful, big dealers in cities like Philadelphia, St. Louis, Chicago, Cleveland, Detroit, or Los Angeles. Two or three times a year is not too often to chase ideas—it would be better to go six or a dozen times and come back with plans and ideas worth while and put them into practice, than to be stingy about it. Suppose I had three men and let them go different months one at a time for two or three days, then when they came back and we adopted some of the ideas they had learned, wouldn't they think it was bully? Wouldn't the next one be keen to be thought a closer and more practical observer? Wouldn't it increase the interest of every one of them in the business? Wouldn't it help the whole business?

"With such a plan followed out, it would be impossible to keep in a rut; ideas, ideas, then analysis, comparison, judgment and action. No chance for stagnancy or gloom to exist in such an atmosphere."

QUICK TURNOVER OF STOCK AS A MEANS OF AVOIDING LOSSES

The best merchants are those who keep their stocks cleanest, freshest and up-to-the-minute. It is profitable sometimes to sell slow-moving goods at cost in order to put the money into something that will move quicker at a profit. Quick turn-overs are one of the secrets of money-making merchandise.

Listen! This does not mean cutting prices on regular goods that are up-to-date. It means turning goods into money rather than have them hang on indefinitely and be compelled eventually to take less.

When the straw hat season is on, a $3 hat commands $3. There is no argument. But when the season is waning the wise merchant cuts prices to the bone—gives the public a bargain, gets back the cash he had invested and is ready to take advantage of the cash discount on the fall goods.

Many an automobile dealer has money tied up in products that might better be sold at once without a profit. The idea is to keep things moving. Especially is this true as far as supplies are concerned. Certain materials deteriorate with age. Keep your eye on these—and make them move fast. The money is always mightier than these goods.

GARAGE ADVANTAGES THAT LIE IN WISE USE OF ROAD SIGNS

A tour made recently through central New York shows that garages in general are not living up to the opportunities open to them by the judicious use of road signs. If a man wants gasolene and oil he is likely to go to the garage that advertises; he doesn't simply look for the sign "garage," but looks for "Jones on Main street." Where good roads abound there is an unlimited amount of touring done, and the dealer in the smaller towns has only himself to blame if he does not reap a decided benefit from this condition.

When to Talk and When to Keep Still.

There's a time to keep still in salesmanship as well as a time to speak. Let the buyer talk. Give him a chance and he will tell you many reasons why he should buy your goods. Of course, he does not intend to; but let him talk, and keep your ears open and your brain busy.

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CIRCULARIZING THE PROSPECT

Methods Employed by Dealer Who Effectively Hammers Home His Selling Points—Letters and Literature That Make Prospect Think.

"We advertise regularly in our local paper—a little weekly that goes to all the farmers in our neighborhood, but we do not stop there," said a live sub-dealer who has built up a strong demand for a medium-priced car in a comparatively limited territory. "Once a week we send every prospect something that will add to his stock of practical knowledge about our cars. Every piece of lilterature that the factory sends us is immediately put to good use, and at regular intervals of three weeks we shoot out a multigraphed letter properly filled in with the prospect's name and address. This sort of work, coupled with persistent personal effort backed by a good car, is responsible for the success we enjoy. I have come to the conclusion that the first element in a good automobile business is a good car; the second is good personal salesmanship; the third is regular and systematic cultivation of the territory by use of letters and good printed matter.

Many Subjects Covered by Letters.

"Our letters cover a variety of subjects. The first one is right to the point about our car. The second letter takes up some features of our car that we think particularly adapt it to the roads of our section. The third letter is accompanied by a booklet explaining and describing still other features of the car, and winding up with a list of recent purchasers in the community. We vary this plan from time to time as we see a change necessary, and add letters written personally to cover points brought out in the salesman's reports. If you can only get a prospect thinking that you are really familiar with his needs, the battle is half won: It is a contsant study with us, and we are always on the alert to learn any other methods that have been successfully employed by others."

WHY SELLING POINTS NEVER NEED BE THOUGHT WORN OUT

Did it ever occur to you that sometimes "familiarity breeds contempt" for the very points that have helped you close sales before? The fact that you have used a certain argument for a long time is no reason for discarding it. That very point may prove the most potent in the world for the present customer. Do not disregard any detail that contributes to the real strength of your proposition, no matter how many times you have used it or how threadbare it may seem to you. Remember, the man you are trying to sell may never have heard it before, and it is just as vital to him as to anyone you ever used it on.

This brings up the fact that there is such a being as the hundred-point salesman. The hundred-point salesman knows that 95 per cent. is just 5 per cent. short of delivering the goods—and that 105 is exactly 5 per cent. too good. Or, to put it another way, if the fruit is six feet two inches away from you, a six-foot pole is just two inches short of getting the fruit. One of the small details, so familiar as to seem almost worthless, might just make up the necessary two inches. Think it over.

DISPLAYING WARES SO THEY WILL HELP SELL THEMSELVES

Accessory dealers who keep such goods as pliers, small tools, and so forth locked away in cupboards, out of sight and out of mind, would do well to study the merchandising methods of most of the large hardware and department stores.

You enter one of these modern stores in search of a single article perhaps worth 30 or 40 cents. While peering over the neatly arranged baskets or boxes containing the various lines of tools, you are amazed at the number of things you really need that are staring you in the face. There's a triangular file and a half-round, and a rat-tail (you always intended buying them, but you always forgot till you actually needed them); and there are those cutting pliers and the small pocket pincers that you have wished for a thousand times. Before you get out you see several articles (all marked with the prices in plain figures) that you want and you buy them. Your purchases aggregate a couple of dollars—just five times what you planned to spend. What did it? No salesman spoke to you. You just saw the goods there, noted the reasonable prices, remembered you wanted them, concluded you might better buy now, while you are thinking about the matter, rather than later.

Why "Five and Ten" Sales Are Large.

This is the secret of the big sales made by the five-and-ten-cent stores. It is the secret of the big sales made by many prominent accessory dealers. It is an idea that works and can be made to work for every dealer in supplies and accessories who chooses to adopt it. People who run automobiles are not different from other people; they are the same people who are large customers of the stores in other lines, and the same methods will work with them.

Dirty Floors and Their Influence.

That caked grease and dirt that covers the floor of some garages may seem like a little thing, hardly worth bothering about; as a matter of fact, it is a serious proposition. It not only annoys customers, but it eats into the soul of the repairmen and is often responsible for sloppy work. Experience is a good teacher. Suppose you try the effect of clean, greaseless floors. Note the effect on your men and then on your customers.

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BACKBONE—REMEDY THAT ASSURES A SILVER LINING

Pessimistic Dealers and Salesmen Are Referred by Studebaker Corporation to Bill McQuigg — Won Success on Cripple's Bed.

"I have just finished a long session with one of our dealers who felt that the world didn't need him any longer. He felt dirty and grimy and disgruntled. His patience was at an end, and the future looked to him like an empty gasolene tank," says the Studebaker News.

"He has changed all my plans. Instead of talking to you about another of the laws of salesmanship, I am going to talk to you about Backbone. I can't help it, for I know that the men of backbone are the chaps that are doing the world's work. They all had faith. They all believed in themselves, in their work, in the need of the world for that which they offered. They all had backbone.

Salesman Should Not Be a Jellyfish.

"The jellyfish has no backbone, no direction or desire—it is only a quivering, slippery mass. We can't afford to be jellyfishes. Successful salesmanship is largely a matter of courage—without it you might as well quit business. Courage to believe in a bigger and better success than you have ever won—courage to go after it—courage to stay with it—courage to get it.

"Let me tell you the story of Bill McQuigg as told to me by my good friend Ray Clark Rose, formerly star reporter on Chicago newspapers and now a wealthy land owner in California. The man who can lose hope and courage after knowing what Bill McQuigg did—well, he can be little more than a poor excuse for a man.

Began to Live Where Others Would Die.

"Listen! If you think your cake is dough, go see McQuigg, and he'll show you! Bill McQuigg says he doubts if he ever had any backbone until he got his broken, some 13 years ago. From that day to this he has been dead, practically, from his waist down, but he declares that he really began to live at the moment when you and I, Brother Salesman, might have felt justified in giving up and dying. Most chaps do who get their backs broken across the middle.

"But Bill! Say, don't get too close to his bed (planted right in the center of his printing shop) or he may give you a playful poke in the ribs that will remind you of Jim Jeffries in his palmy days, in spite of the fact that there is a suspicious flatness, relieved by two pitifully narrow ridges where two big, powerful legs would bulge up the coverings if the Bill of 13 years ago were lying there, for he was as hard as nails in those devil-may-care gold mining days in the West.

"The most wonderful part of it all is that Bill's optimism is so huge, so virile and brawny, that, after facing him for five minutes, you are inclined rather to envy him, and to wonder if it wouldn't be worth while for you to go back and get your back broken, too, just to make a man of you.

What He Did After Misfortune Came.

"Here is a list of the things that this man has done since he became dead from his navel down:

"Earned the money to buy a farm for his father and mother.

"Earned the money to buy valuable real estate in Chicago.

"Established a successful job printing business, including purchase of building site, erection of building and complete equipment of a modern printing plant.

"Educated himself in natural philosophy and kindred subjects.

"Made himself an expert in business analysis.

"Developed a glorious cheerfulness that has conquered pain that is constant (nearly) and a deathly sickness that clutches him at intervals; for you must remember all normal functions have ceased from the waist down.

"When you enter Bill's shop, above the noise of the presses you will hear him shout, 'Hello, old man!' if you are a friend (you are sure to be if you have met him), or there will be a broad, appreciative smile for you if you are a stranger.

Cheerful Even in Great Adversity.

"Bill lies there propped up by a mass of pillows, with proofs and 'copy' all about him on the bed, a movable telephone at his elbow and an invalid's table, with a typewriter fastened to it, in front of him. Directly in front of him, on the opposite side of the room, are heaped up ridges of paper stock as colorful as mountain sunset. Bill sometimes call them his mountain peaks of unliberated thought, and he may tell you of the fairies of fancy that come stealing through the paper passes sometimes during the long nights that he spends alone there at 865 Galt Court, in the heart of the Italian quarter of Chicago, for Bill never leaves the shop from one year's end to another.

"I suppose you will insist upon knowing how the accident happened to Bill. It really doesn't matter, but he was sinking a shaft in a little gold prospect in Arizona. He bent forward to light his cigarette at the moment a bit of quartz slipped from the side of the shaft above him. It tapped him lightly in the small of the back, but in a flash Bill changed from a reckless, hardy adventurer to a despairing, pain-wracked and helpless cripple.

"The story of the agonizing waiting for the coming of his partner, of the weeks with little or no medical care in a mining camp, of months of suffering and delirium in a hospital, of the years of mind fog and bodily weakness almost fatal, and of the final triumph of will over weakness, hope over despair, is the story that Bill never tells—unless you are down and out and need it.

"However, Bill is no hero, he will tell you. He refuses to be lionized. In passing back and forth through the valley of the shadow of death for his soul's sake he has come to believe that power comes through service for the chap who can't pay the price (save gratitude) but who needs the help. And those who see this man and talk to him go away with a sense of shame at their petty complaints, and a high resolve to 'sin no more'—for the present, at least.

"See Bill; Then Get Back on the Job."

"That is why I say to you, Brother Salesman and Dealer, if you think that you are down and out, if you think the world's against you and the 'jig is up,' if, in fact, you have reached that stage where you are afraid that the automobile business will be sucked up under some heavenly vacuum cleaner, pawn your shirt, or steal one to pawn, if necessary, and make a little pilgrimage to William H. McQuigg, Man and Gentleman, and then get 'back on the job' and make the sparks fly upward, sir!"

Steam Vulcanizer of Unusual Construction.

Portable vulcanizers usually are operated without steam, despite the well-known advantages of the steam method, because of the bulk of the generating apparatus. There has been placed on the market, however, a car vulcanizer that is a complete little steam plant, though it can readily be carried under the seat and its weight is but three pounds.

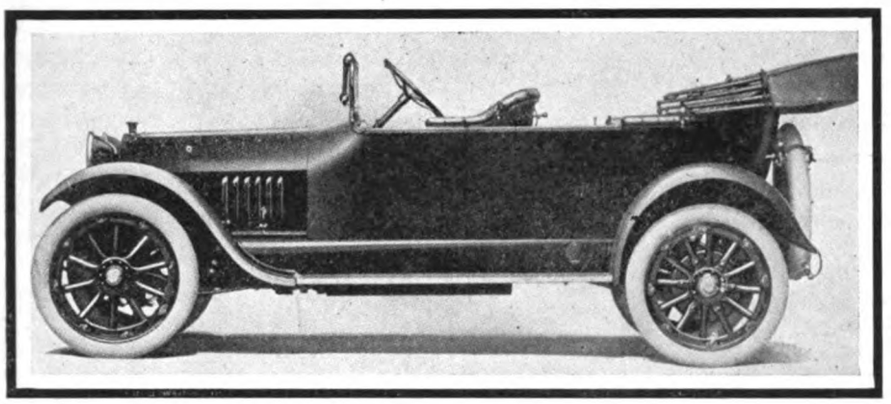
The Positive vulcanizer, as the device is called, is made by the Positive Tire Vulcanizer Co., of Davenport, Iowa, and it consists of but a single casting having two compartments, one for water and the other for gasolene. The device is applied to the tire, which may be in place on the wheel and need not be deflated, by chains and thumbscrews, and the gasolene ignited. The water compartment, being between the flame and the rubber, prevents overheating, and a sheet steel hood serves as a safeguard against the flame above the casting. Cuts up to 2½ inches long can be vulcanized at one setting, and longer cuts by resetting the device.

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EFT STEER AND ELECTRIC STARTER FOR CHALMERS

"Six" Otherwise Brought up to Date with Larger Motor and Longer Wheelbase—$225 Lopped off Touring Car Price.

Not content with any half-way measures in bringing its newer series "six" right up to the latest in design and construction, the Chalmers Motor Co., of Detroit, Mich., has virtually redesigned the car and in the redesigning has built into it a number of features that never before have appeared under the Chalmers nameplate. Perhaps the most important of all the changes that have been made is embraced in the adoption of the Entz electric lighting and engine starting system in place of the highly perfected compressed air system that has been used in the past, and this, coupled with an alteration in the size of the motor, the shifting of the steering gear and control levers to the left and center, respectively, a longer wheelbase, more resilient springs and several less important mechanical changes makes plain that the new car is quite a little different from its predecessor.



LATEST CHALMERS TOURING CAR, WHICH HAS ELECTRIC STARTER

Most important of all, however, is the fact that a material reduction in price has been made despite the many improvements. Instead of listing at $2,400, the three-, four- and five-passenger open cars now sell for $2,175—a reduction of no less than $225; instead of $2,600, the six-passenger touring car now lists at $2,275; and $100 has been lopped off the price of the seven-passenger limousine, which heretofore sold for $3,700. A slight increase has been made in the price of the coupe model, however, the new list price being $2,850 instead of $2,700.

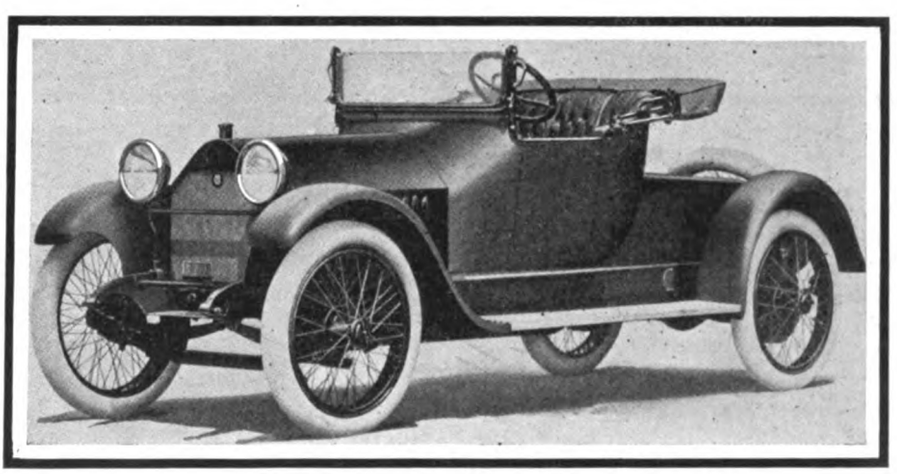
In altering the dimensions of the motor cylinders, Chalmers engineers have sought to reduce vibration to the minimum and at the same time obtain proportions conducive to the greatest possible power output. To this end the bore has been reduced from 4¼ to 4 inches and the stroke increased from 5¼ to 5½ inches. The increase in size coupled with better design in the proportion of the combustion chambers and alterations in the valve timing and in the manifold design permit the generation of considerably more power than was obtainable with the old dimensions; at 1,000 feet piston speed, 50 horsepower is developed easily, and at higher speeds the maximum power drawn can be increased to as much as 70 horsepower.

As heretofore, the six cylinders are cast in blocks of three and the valves, which are formed of nickel and tungsten steel, are located on opposite sides, thus providing for adequate sweeping out of the residual charge after combustion; valve stems, guides and springs are enclosed quite as a matter of course. To provide more efficient lubrication, an alteration has been made, the main bearings now being fed under pressure together with the timing gears; oil sumps are provided to collect the used oil, which is twice strained before it it is again sent on its rounds of lubrication.

In the carburation system, an important change has been made in the adoption of a completely water-jacketed intake manifold, the clean design of which is clearly shown by the accompanying illustration. As usual, the carburetter, too, is water-jacketed and, in addition, a hot air inlet has been adopted. The carburetter is a Rayfield with dash adjustment. Ignition is by Bosch high-tension magneto operating through a single set of plugs and cooling is carried on by pump-circulated water.

In formally adopting the Entz electrtic starting system in place of the compressed air system that has been used in the past simplicity has been the guiding star. Instead of the multiplicity of air pipes and valves, there is now a compact combined electric motor and generator permanently geared to the engine by means of a "silent" chain, the necessary wiring and a storage battery which also serves to furnish illumination.

The Entz system differs from others in that it is minus the usual "cut-out" to disconnect the generator and gasolene engine when the speed of the latter drops. Hence, it is not possible to stall the new Chalmers engine for, as the starting motor always is connected, it takes up its functions automatically immediately the speed of the engine falls below a predetermined limit. In starting it is merely necessary to close one dash switch, which makes the connection between the battery and the starting motor; thereafter the switch is not touched until it is desired to stop the motor. When, after starting the gasolene motor, its speed increases, the electric motor automatically becomes a generator and replaces in the battery the current drawn for starting and lighting.



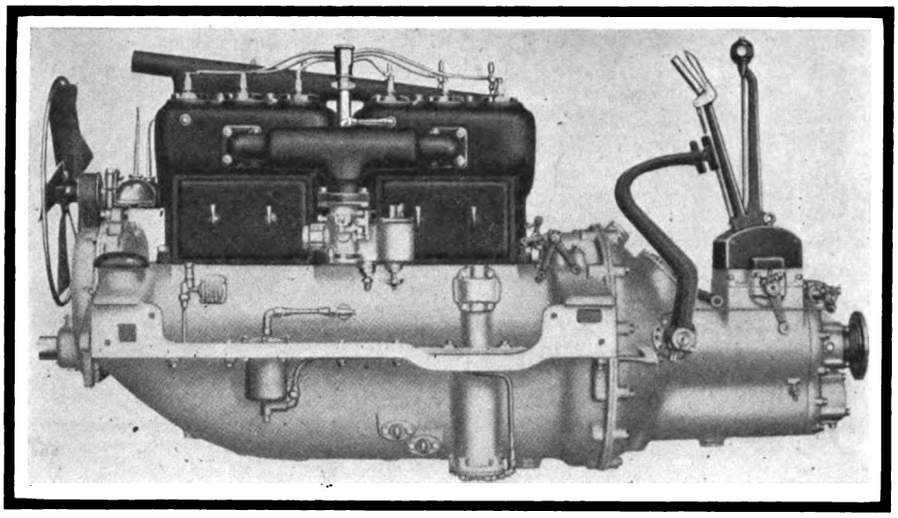
WIRE-WHEELED CHALMERS ROADSTER, SHOWING DOMED FENDER

Back of the engine, in the transmission elements, not a great amount of change has been made; as heretofore, the clutch and gearset are a unit with the motor, though the clutch remains of the multiple disk type, provision now has been made for

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its lubrication from the engine base. The gearset is of the selective type and provides four speeds forward and reverse; one excellent feature of design is that there is a positive lock provided for locking the gear shift lever in the neutral position. The location of this lever in the center of the footboard instead of at the right side is brand new in Chalmers construction, of course, and marks the conversion of one more prominent manufacture to left-side steering.

From the gearset, the drive is carried to the rear wheels through the orthodox shaft and two universal joints; the rear axle is of the full-floating type and is encased in a pressed steel housing with a liberal handhole for adjustment. Timken roller bearings are used in both the rear hubs and the differential mechanism. The front axle remains a single-piece drop-forging in I-beam section, with the wheels mounted on Timken roller bearings. Both sets of brakes are carefully equalized and operate on rear wheel drums; the service set is contracting and operates on 16⅜ x 2¼ inch drums and the emergency set is internal expanding, the drums being approximately the same size.



CHALMERS UNIT POWER PLANT, SHOWING WATER-JACKETED INTAKE

Though the springs remain of the same type as heretofore—semi-elliptic in front and three-quarter elliptic in rear — they have been made more resilient by the addition of main leaves of Vanadium steel. In the rear suspension an important change has been made in the method of mounting the springs, which now are hung beneath the axle; the body therefore is lower than heretofore and it follows that stability has been increased. Obviously no alteration has been made in tread, which remains standard—56 inches. The wheelbase has been lengthened, however, and now measures 132 inches instead of 130 inches. No change has been made in tire or rim equipment, all four wheels being shod with 36 x 4½-inch tires carried on Continental demountable rims.

In external appearance, there can be no doubt that the car has been materially improved, which fact is made plain by the accompanying illustration. Instead of the straight fenders that have been used in the past, domed fenders of the type that steadily is growing in popularity, are used, and they have been so designed that they fit the wheels snugly. Running boards are absolutely clear and even windshield struts have been eliminated, thus giving a seldom-equaled appearance of "cleanness." The windshield, by the way, is rigidly built in place and, as an indication of its strength, despite the elimination of stay rods, it is pointed out that it may be used as a convenient handle to assist passengers in entering or leaving the front seats. Another feature that bids fair to increase in popularity is that the usual side lamps have been eliminated and in their place there are double head lamps with 24-candlepower bulbs for touring and smaller ones for town service. Spare tires are carried at the rear of the body, as is the 24-gallon gasolene tank, and regular equipment includes a clever luggage carrier mounted integral with the body just aft the engine hood.

Equipment is about the same as has been included in the price heretofore, except that an electric horn, an inspection lamp and a Corbin lock have been added; the remainder is as follows: Mohair top with Collins side curtains and dust envelope; windshield; Warner speedometer, Entz electric lighting and engine starting system; tire carriers; gasolene gauge; license brackets, and the usual complement of tools, spare parts, and so forth. At the option of the purchaser, five wire wheels will be substituted for the wooden wheels at an increase in price of $80; or a casing and tube with tire cover and a four-cylinder Kellogg tire inflator will be added for an extra consideration of $75.

Increasing the Efficiency of Dividers.

In shop work it becomes necessary in some kinds of work to use a pair of dividers on a shaft or the like, working from the lathe center in the end. As such a center usually affords no accurate guide for the point of the dividers, the best thing to do is to provide one of the points with a brass ball, such as are sold for making ball checks. By drilling a hole in the ball and reaming it to about the same taper as the divider point, so that the point will enter and hold without shaking, the tool can be conveniently and accurately used from a lathe center of almost any size, as long as the tapered sides of the center are smooth and true.

Value of Proper Size Screwdrivers.

It is entirely possible to grind or file down a big screwdriver to fit a small screw, and it is a thing that often is done. But nevertheless it is a very slipshod way of doing things, and those who do it are sure to discover that fact when it comes to using the tool for a screw of the size it was designed to handle. It does not require many sizes of screwdrivers to fit all the screws on a car, and the cost even of a good screwdriver is by no means a serious matter. So there is no good excuse for not having in the tool kit a screwdriver suitable for each screw, without the necessity for doing any "stretching" of the tools.

Ammeters that Serve as Tell-Tales.

Where electric lighting and engine starting systems are equipped with ammeters, it should be remembered that the meter serves not only as an indication that the generator is charging the battery or that the lamps are burning, but it makes plain as well just how many lamps are lighted. Thus, for instance, if two head lamps draw five amperes, one lamp will draw only 2½ amperes, and though it may be difficult to judge whether one or both lamps are lighted from the amount of radiance, the meter serves as an infallible tell-tale.

To Render Easier Cleaning of Hands.

To those who object to the old method of thoroughly greasing their hands in order to make subsequent cleaning easy after an overhauling job, for instance, it is recommended that a solution composed of four parts of alcohol, three part of glycerine and three parts of water be used instead. This should be well rubbed in and the hands permitted to dry before work is commenced.

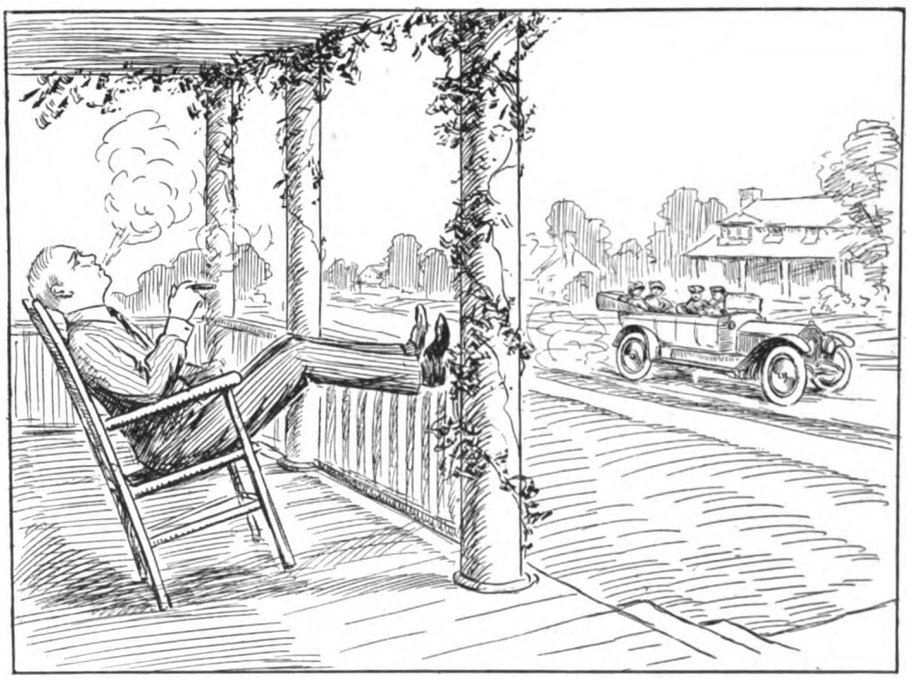
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AVOIDING SELLING PROSPECT "SPECIAL STUFF"

Reilly Advises a New Dealer Not to Be Anxious to Book Orders That Differ From Stock and Regular Equipment—Says Practice Entails Undesirable Delay—Favors Stock Sale and a Quick Delivery.

Reilly had eaten a very late Labor Day breakfast and, like all good men who labor for a living, was taking a day off, and as a starter on this day of rest had found a sunny spot on the front porch where the morning sun was just warm enough to take the tang out of the September air; the coat sweater he wore when he emerged from the house had been discarded, and with his feet on the rail, his sole occupation was watching the smoke clouds which a bare stir of the air wafted unbroken from his cigar.

He was intently engaged in seeing how high he could persuade the thin pillar of blue to rise vertically from the end of the cigar before an atmospheric movement carried it out of the perpendicular, when his business was interrupted by the appearance of a car which rolled leisurely down the street; in it were two men and two women, and as Reilly recognized the driver as Craig, a fellow dealer from a town some 70 miles away, Craig spotted Reilly and the salutations were simultaneous.



HIS BUSINESS WAS INTERRUPTED BY A CAR WHICH ROLLED DOWN THE STREET

"Hello, loafer!" shouted Craig.

Dealer and Prospect on Holiday Trip.

"The same—and many of them," returned Reilly, as he went to the curb.

Craig introduced the remainder of the passengers as his wife and Mr. and Mrs. Trever, and explained that they had made a sunrise start and were going to a little nearby lake for a shore dinner.

"Get out and stretch your legs; you've got lots of time—it's only about an hour to the lake," suggested Reilly.

They debated, the women made and changed their minds several times, which they had a perfect right to do, and the compromise finally effected resulted in Craig climbing out and joining Reilly on the front porch while Trever took the wheel, the two women got into the tonneau and this majority of the party set out to ramble around and see the town for half an hour.

"Who's Trever? I don't seem to be able to place him," puzzled Reilly, who had an idea he ought to know everybody within a radius of a hundred miles or so.

"He's an insurance man; he——"

"That's why I don't know him; I dodge 'em," interrupted Reilly.

"He's one of my prospects," continued Craig. "Or, rather, he's going to be an owner; I had a son-of-a-gun of a time getting him signed up, but I did it. But I had to fight the factory to get the order accepted; they don't seem to be anxious to sell a man anything but a regular stock model—color, equipment and everything else."

Landing Orders by Changing Details.

"Do you turn in many special orders?"

"Quite a few," replied Craig. "If a man doesn't like the stock model and I can sell him by giving him a different color or something different in equipment, I do it every time. I think it's good business, don't you?"

"Well," and Reilly hesitated a moment in thought, "I don't believe I do; I don't believe very much in special orders.

"From the factory point of view, it isn't good; it makes overhead and increases the manufacturing expense," explained Reilly. "Production has been concentrated on making a stock model, and every deviation from the prearranged plan means an added expense. Generally this falls on the factory and not on the dealer—that is, provided the special work isn't very much."

"Is that so?"

"Yes, and I don't believe it's very good for the dealer's business?" continued Reilly. "If you can get a man to take a stock model you can make a quicker delivery, as a general rule, and it doesn't give the public an idea that it can get any change it wants made when it buys a car from you."

"But supposing they insist upon having special stuff?"

"Lots of prospects have an idea they want special stuff," asserted Reilly, "but it's nothing but an idea, generally.

Emphasize Advantage of Stock Model.

"You ought to frown on such stuff and explain to the prospect the advantages of taking a regular car. Also, if you take an order for a special car, even if it's nothing more than a different colored upholstery, you are not going to be able to make as quick a delivery as you could otherwise."

"Why not?"

"Well, the principal reason is that your order has to come all the way through the factory and you have to wait until that particular body can be finished, whereas if you take a stock model you may be able to get one within a very short time. In fact, you may have a stock model on your floor.

"A dealer's business is to sell to the pub-

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lic the goods he has, not to sell them something he hasn't got and therefore must get after the order is taken. I used to have some trouble that way, but I finally made up my mind that I would put every ounce of ability I had into selling the man what I wanted him to take and not let him be the better salesman and persuade me to sell him something I didn't want to let him have. It can be done, as you will learn if you make up your mind."

"It doesn't seem a bad plan," commented Craig. "Of course, you know I haven't been in this business as long as you have; its only about a year now."

Extra Car in Salesroom Good Plan.

"You'll find it not a bad plan, too, Craig, to keep an extra car in the salesroom; of course, it ties up your money, but if you can afford it you will find that very often it will swing a sale. If a man wants a car and you have one, it is good business to sell him the one you have, and when a man gets to the point where he really wants a car, the sooner he can get it the better for you; therefore, the special order isn't such a good thing as it may seem at first sight.

"My salesman put over a good sale a few weeks ago in which this same question was involved. He was trying to sell a touring car to a family that lives next door to a family that has a touring car. The man who has the first touring car had had it quite a while and the service it had given was one of the salesman's good arguments. If you are familiar with our line you know that some of our present line of touring cars are black and some a dark blue. Well, the first owner's car was blue and the prospect and his wife insisted that they wanted a blue one, too.

Changing Desire for Blue to Black.

"It so happened that the series was running out and the new cars wouldn't be along for several weeks, and there is quite a lot of good touring weather left yet; in fact, autumn is one of the best touring seasons. Also, and what is more to the point, we had a black touring car in the salesroom but had no blue one and couldn't get one very soon.

"The salesman looked the ground over, detected a trace of social rivalry between the two families and decided to make a clever play to the woman. He said he noticed they had painted their house the same color as the first owner's house, and that since they seemed to like the same things the first owner did, it would be a very nice thing for them to have the same colored car as their neighbor. Had they fallen in with him, we would have been stuck with that special order, but his estimate of the woman was correct.

"As soon as the matter was presented in that light, blue began to lose its charm for her; it wasn't nearly as pretty as she thought it was. She began to hedge on the blue proposition, and the salesman became more enthusiastic about their having a car just like their neighbor's. The more he enthused the less she wanted blue, and she finally came out flat-footed and declared she wouldn't have blue. Having gotten that far, the salesman suggested black and said that personally he preferred a black car.

Sold Black Car Because he Had it.

"He also told them he could give them a black car the same afternoon if they liked that color, and since it was a nice day he didn't have much trouble persuading them as to the joy of taking advantage of the



"THE SPECIAL ORDER ISN'T SUCH A GOOD THING AS IT SEEMS," SAID REILLY

fine weather. He delivered the car that afternoon and got the money."

"That's good work."

"The good work part lies in the fact that he sold them the car we had and not the car they wanted," added Reilly. "Lot's of people bob up with an idea they want something different from what we have to give them.

Prospect's "Special" Desire a Notion.

"If we had things the way they want them, most of them would want them the way we have them now; a great deal of it is just notion. But if you can find out the real reason why a man thinks he wants something different from stock, you are in a position to show him why he will be just as well satisfied with what you have to offer. And after he gets the car he never knows the difference, provided you take care of him and see that he gets good service.

"I had one prospect who insisted that he had to have the tool box built into the car somewhere so it wouldn't show. He declared he had to have a clear running board. Our tool box is on the running board, and I must admit to you that a clear running board is a mighty pretty thing; but despite that fact, it is a knotty little engineering problem to dispose of to good advantage, and we haven't been able to find a satisfactory solution.

"If that prospect had had his way, I would have had the tool box built into some darned place which the experience of our engineers has shown to be not so all-around desirable as the running board, and in the end the owner probably wouldn't have been satisfied. Not only that, but it would have taken some time to get the order through, and all that time the man would have been without his car. I like to sell and deliver as quick as I can. I had some session with him, and finally I asked him if he thought the S—— and the T—— cars looked any better than ours, and I asked him why.

What Craig Did with "Special Order."

"He said they certainly did, because they had a clear running board. Then I showed him their latest catalogs, with fine, big tool boxes on the running boards."

"What did he say then?"

"He said, 'Oh, h——! Bring out your contract.'"

Just then Trever buzzed the horn in front of the house and Craig left. Later in the day they passed again on the return trip. Craig stopped again, ostensibly to ask Reilly something, but what he said in the three minutes he spent on the Reilly premises was, "S-s-s-s-sh-h! I sold him the demonstrator and have canned the special order."

Tag Colors Offended Esthetic Taste.

When Mrs. Thomas Settle, of Asheville, N. C., wife of the Republican State leader, found that the maroon and white colors of the new State license tags did not harmonize as she thought they should with her car's black body, she adopted what she considered a perfectly legitimate course and had the maroon letters made white, leaving the background white; when a policeman halted her she protested that the specified colors were totally out of harmony with the body of her car, but the officer told her she would have to explain her ideas of harmony to the judge.

May Extradite Former Chicago Supplyman.

Application has been made to the Federal government for the extradition from England of Albert V. Webb, who, until May 31, 1913, was in charge of the American Auto Supply Co., of Chicago; it is alleged that May 31 Webb decamped with $3,600 of the company's funds.

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$1,000 ELECTRIC WAGON DEVELOPED BY VAN AUKEN

Extreme Simplicity Makes Machine Almost Foolproof—Batttery Divided and Hung in Unusual Locations—Shaft Drive.

There is and there always will be a demand for automobiles, of both commercial and pleasure types, that are of a better quality for the price, or of lower price for the quality, or both, than others on the market, and it goes without saying that such demand furnishes the inspiration for the remarkable development that has taken place in the cars that sell for moderate and low prices. Among the more recent evidences of the quickening effect of a lively prospective market is the organization, which took place some three months ago, of the Van Auken Electric Car Co., of Connersville, Ind., with Charles M. Van Auken, who has conducted no little special work for the Ford company, as its moving spirit and president; Guilford C. Babcock as vice-president and treasurer and Clarence C. Millard, formerly with the Connersville Carriage Co., as secretary. Van Auken has designed a light electric delivery wagon that is priced at $1,000—a figure difficult to place on a well-built electric—and it embodies several features that go a long way toward making the car a good "buy."

The carrying capacity of the new Van Auken light wagon is 750 pounds and the weight of the vehicle itself is 1,625 pounds; the speed is held down to an economical maximum of 12 miles an hour, and it is stated that under normal running conditions the distance that can be covered on a single charge of the battery is from 40 to 50 miles. The battery is a 16-cell Exide Hycap, carried in two trays of 8 cells each, and the method of carrying the battery is one of the peculiarities of the machine. Departing from conventional practice, the trays are suspended one at each end of the car—half the battery in front of the front axle and half of it back of the rear axle. The two sections are exactly alike and interchangeable, and the terminals are so arranged that a mistake in connecting up is impossible. Obviously the whole battery is readily accessible for examination or flushing, and the time required for making an entire change of battery is given as but five minutes. The trays are light enough to be easily handled.

An important advantage of a small electric vehicle is the low cost of current. The Van Auken company states that the cost of charging the battery in the delivery wagon is from 40 to 60 cents, according to local charges for current, which vary greatly. For work under the pressure of unusual volume of business an extra battery can be charging while the car is on the road and a change quickly made when the service battery is discharged, thus keeping the machine running continuously, if necessary.

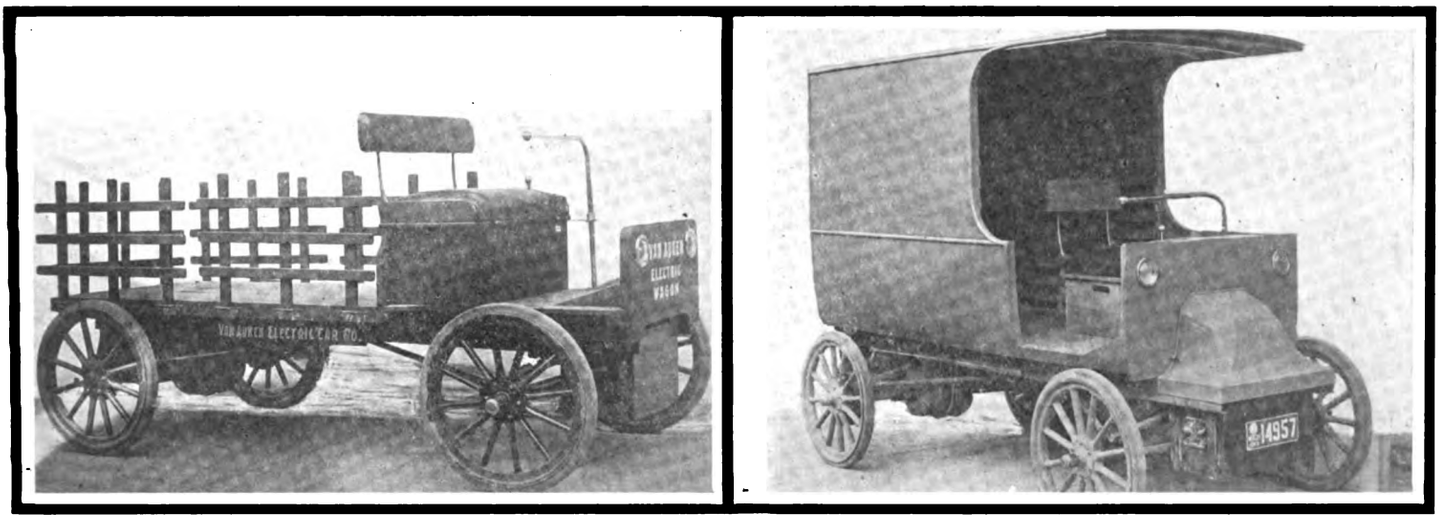
A strong appeal is made with regard to simplicity. The drive is through propeller shaft with two universal joints and bevel gears to the live rear axle, and an intermediate gearing gives the requisite speed reduction. Including such things as spring eyes, universal joints, steering connections, etc., there are but 32 wearing surfaces in the car, so that with proper design—which it is not difficult to take for granted in this case—the friction losses should be slight and the deterioration through wear at a minimum.

The dimensions of the machine have been kept down to avoid a size out of accord with the work in view. The wheelbase is 80 inches and the tread 51 inches; the wheels, 28 inches in diameter, are shod with 2-inch Firestone solid tires. In the case of the covered model the body has 70 cubic feet of loading space, and it will be noticed that the seat for the driver extends but half-way across the car, making an unusual amount of room for long packages and also providing an easy way for the driver to enter the body.

The length of the car from dash to rear end is 96 inches and from the back of the driver's seat to the rear end, 56 inches. The width of the loading space is 41 inches, and of the driver's seat 21 inches. The height from the floor to the top is 53 inches and from the top of the floor to the ground 30 inches.

The control of the car is exceedingly simple, even for an electric. The steering gear is of the lever type, which is thoroughly satisfactory for a light, moderate-speed machine, and the power control is effected through a controller of the rotary type, so designed that there is no arcing between the contacts. The controller contacts are so laid out that the entire battery is conneced in series with the motor at all speeds, and is of the continuous torque kind, which does away with the disagreeable—if nothing worse—jerking when passing from one speed to another which is so noticeable in many of the old-fashioned commercial vehicle controllers.

In its essentials the open model is exactly like the enclosed type, but the seat is carried clear across the car and the little hood that serves to put a sort of finish on the car with the top is absent. The equipment of the car is sufficient for such a simple machine and includes, in addition to the few tools needed ,a volt meter, an ammeter, an odometer, electric lights and an alectric horn.



OPEN AND CLOSED MODELS OF VAN AUKEN $1.000 ELECTRIC WAGON, SHOWING DIVIDED BATTERY

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PREVENTING DETERIORATION IN IDLE STORAGE CELLS

Expert Lays Down Rules for Proper Treatment—Small Charges at Regular Intervals Essential—Use of Hydrometer.

To those who are familiar with the vagaries of storage batteries, it is an axiom that if they are to be kept in the best of condition they must be used continually, barring which they must at least be charged at regular intervals unless other means are taken to preserve them from the deterioration bred of inactivity. All of which, and more, ably is set forth by the Willard Storage Battery Co., of Cleveland, O., in calling attention to the care that is necessary in "laying up" batteries during the winter months, or any other time, when they are not in use.

The first requisite, according to the Willard company than which few companies have had greater experience, is a hydrometer; it is an inexpensive instrument that may be purchased from any dealer in battery supplies or from almost any druggist If it is purchased from a druggist, however, care must be taken to specify the purpose for which it is to be used.

The second consideration pertains to the storing of the car, assuming of course, that it is equipped with a complete electric lighting system, including a dynamo. The owner should arrange so that the engine can be run for a couple of hours at least every two weeks. Contrary to expectation, it is not necessary to run the engine for a long time, for the good and sufficient reason that, as no current is drawn from the battery, little will be required to bring it up to proper condition. However, the engine should be run until the solution in the battery tests out at 1.280 degrees specific gravity, according to the hydrometer reading. If this is done regularly, about once every two weeks, it will be necessary to run the engine only about an hour each time. Where a hydrometer is not obtainable, it is advisable to run the engine from two to three hours as a measure of precaution. In either case the engine should be run at a speed corresponding to a car speed of approximately 20 miles an hour.

In cases where it is impossible to run the engine, or where the car is equipped with only the battery and has no dynamo and direct current is available, it is a comparatively simple matter to give the battery a "soaking" charge once every two weeks by merely attaching it to the electric light mains through a suitable bank of lamps, of course, the number of lamps depending upon the size and capacity of the battery. Where only alternating current is available, a small rectifier such as may be purchased in the open market—there are several brands of them—is all that is required. A charge over night, or for about 12 hours, will be sufficient to maintain the battery in a healthy condition.

Whenever a battery is to be charged, the solution always should be examined first to make sure that it completely covers the plates. If it has receded slightly, due to evaporation, only distilled water should be added, bringing the solution up to normal level. Determination of the level of the solution may be made by removing the vent plugs and inspecting the plates.

In cases where none of these methods are available, the battery should be removed from the car and stored with a competent battery man for care, or should be left in the hands of a garage man who is versed in the proper care of batteries. Stipulation should be made, however, that the battery must be charged regularly every two weeks, if it is to be found in good condition when wanted for service.

Such methods, of course, are the simplest and, if adhered to as outlined by the Willard company, should result in the battery coming out of its long period of inactivity not harmed but actually bettered for the rest. Care must be taken, however, to store batteries in a dry place, preferably where the temperature does not fall below 40 degrees Fahr.

When a Car Is Not a Bath House.

An automobile is not a bath house. Any one ought to know that, but it took the police of Rockaway Beach, which is on Long Island, to make it plain. Residents of that more or less popular seaside summer resort complained to the police that motorists were in the habit of driving their cars near to the beach at the ends of residential streets, where they retired behind side curtains and emerged in bathing suits. So a squad of officers was sent to warn those who might attempt the proceeding, and a good many wet and dry motorists went without their expected dips.

Desert Annual Show for State Fair.

Instead of holding an annual automobile show each spring, the Dallas (Tex.) Automobile Dealers' Association plans to make its display at the Texas State Fair, which it held at Dallas each fall, and for that purpose has erected an Automobile Building containing 41,600 square feet of floor space; the building has been accepted by the State Fair directors. It will afford accommodation for 225 cars. It cost $12,000, and $2,500 will be spent in decorating it appropriately.

UNWISE POLICY FOR SMALL DEALER TO STOCK HEAVILY

Money Turned Over Quickly and Frequently Yields Greater Return—Illustration of How One Sum May Yield Best Profit.

That the small dealer should avoid tying up too much capital in a large stock of one article is realized by many tradesmen, but there are those who will permit a suave and unscrupulous salesman to load them with an unreasonably large order; many small businesses come to grief because of this failing when the goods do not move quickly.

How the unexpected skid occurs on the business roadway is made plain by a wholesaler of small articles, who said: "More small business ventures come to grief because their owners overstock on merchandise that does not sell quickly than for any other reason. Let me show why small merchants, as well as large, should buy often and in small lots. Take a slow-selling article that wholesales, for example, at $9 a dozen, or 75 cents each. Suppose that buying this article singly means that it costs 78 cents. The 36 cents saved on the dozen purchase looks fine at the time of buying, and often swings a sale. Suppose, however, that it takes six months to sell the 12 articles at a profit of 25 per cent. This means that the $9 spent earns $3.25 in six months. Suppose, on the other hand, that one article had been bought at 78 cents, had been sold at the same profit, and the remaining $8.25 had been put into more active merchandise. It is not unusual in this business to turn stock over four times in six months on certain goods. This $8.22 in stock, turned four times with a 25 per cent. profit, would mean that the merchant would take in about $42 on the dozen purchase."

Dream of Fatal Accident Came True.

After dreaming one night last week that he had been killed in an automobile accident, George Knitteberger, a chauffeur, of New Rochelle, N. Y., sustained fatal injuries the following morning, and died in a hospital to which he was removed. When Knitteberger appeared at the garage where he was employed he told of his dream of the night before and then startetd out with three other men to test a chassis. He was driving on the street car tracks and, seeing a car approaching in the opposite direction, attempted to turn out, but the steering gear stuck and the chassis hit the street car head on. Frank Phelico, one of Knitteberger's companions on the ride, also was killed.

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HOW CAN THE MANUFACTURER HELP THE DEALER?

Prompt Attention to Complaints of Man Who Retails Cars Advocated by Metropolitan Distributer—Tells of a Dealer Whose Complaint of Defective Clutches Brought Answer, "It Can't Be So."

"He gives twice who gives quickly," was said by someone in some such form or other, and while the man who said it probably never dreamed of such a thing as the automobile industry, the proverb is applicable to more than one phase of the business; service that is prompt is admittedly a strong bond between the dealer and the car owner, but there is yet another relation which can stand fully as much cementing as that of the dealer to the owner, and it is the relation of the manufacturer to the dealer.

Few Dealers Who Have Not Complained.

The exact number of dealers in the United States is more or less a matter of estimate, but of the thousands there probably are few who have not at some time —perhaps now—been emphatic in their expression of opinion regarding the manufacturer they represented, and from the dealer's standpoint they were assuredly right in the complaint they had to make; all of which affords opportunity for the question, "What can the manufacturer do to make more congenial and firm the relation which exists between the man who builds the cars and the man who sells them at retail?"

Although many dealers, often in moments of confidence, talk over "the factory," framing an answer to the question is not easy; when a Motor World man asked it of C. H. Larsen, who is the head of the Cutting-Larsen Co., Oldsmobile distributer in New York City, Larsen said that he could say little that emanated from his own personal experience with the manufacturer whom he represents, for, said Larsen, "I have represented them 12 years, seven of which I have been a dealer in New York, and I never have had any cause for complaint.

"It is true, though," he added, "that so far as conditions generally are concerned, I do hear a great deal about what goes on in the trade and about the relations of other dealers and their manufacturers," and when what Larsen said is summed up it is best expressed in "prompt service by the manufacturer to the dealer, promptness in getting behind him and helping him out when things go wrong with the cars and promptness in admitting that perhaps the dealer may be right in his complaint and that the complaint may be worthy of an immediate investigation and remedy."

Some manufacturers—not all of them, by any means—assume the contrary attitude toward their dealers, and it is not unlikely that in many instances the attitude is unintentional; possibly the manufacturer does not realize the harm that comes from his conduct of affairs and the good that might come from a different spirit in the operation of the company.

"I can cite a specific instance," said Larsen. "I know one dealer who went to his manufacturer and told him that there was trouble with the clutches in nearly half the cars in the last consignment he had received. This dealer is located here in New York City, and I think you will concede that a dealer who is distributing in such a populous territory is entitled to as much consideration as anyone else. This dealer insisted that there was something wrong with the clutches.

Manufacturer Said It Couldn't Be So.

"The manufacturer said he didn't see how it could be so. 'Look here! See the satisfaction we're getting!' he said, and proceeded to show letters from men in El Paso, Tex., or Rockford, Ill., in which they said the cars were fine, the best they had ever handled. The letters, in all likelihood, were written by some man who had taken the car out of the freight house and driven it home and then sat down to write about what a fine piece of work it was. He didn't wait six weeks, or even two weeks, to see how it ran, but handed out the compliment right away before he had a chance to know for certain whether the car would travel five miles without a breakdown.

"When the New York dealer still persisted that he had had all the trouble he said he had, the manufacturer called in his engineer and asked him what he thought about the dealer's complaints. The engineer said it couldn't be so, couldn't possibly have happened any way he could figure it out. The dealer didn't get any satisfaction, and went back to his place of business a very disgruntled man.

"There he was; the clutches were going wrong, he could not deny it; he was in duty bound to stand back of the car, so far as the owner was concerned, and still the manufacturer insisted thaere couldn't be anything wrong and that the cars were giving great satisfaction. The more the dealer thought of it the more unkind became his feelings toward the manufacturer, and now —I don't say what caused his move—he has taken on another car.

Investigation When "Kicks" Piled Up.

"But it wasn't long before other dealers began to complain about the clutches. When the kicks began to stack up on the manufacturer's desk he could not help but be convinced that perhaps the New York dealer was right in his complaints. An investigation was started, the engineer was forced to admit that, despite the fact that it 'couldn't be so,' it was so and engineers were hurried out onto the road to right that trouble. All of this was very fine when things finally began to move, but in the meantime this particular dealer had been sailing very rough seas; all because the manufacturer was unwilling to act promptly and to investigate the dealer's complaint.

"On the other hand, there is another manufacturer who incorporated in one series of cars a mechanical wrinkle that had been copied from the rear axles of certain foreign cars. It was supposed that the new feature would work out well and give great satisfaction, but the cars hadn't been out long before one of the dealers said the axles wouldn't stand up to their expectations. Before the trouble had time to spread and before the dealer had time to become disgusted with the treatment accorded him, an investigation was set in motion immediately. The engineers found that the dealer was right and a remedy was forthcoming. The axles were replaced in every instance, and the company stood back of the car to the last axle. Not a dealer had a chance to go back from the factory and accumulate a grouch.

In the same category and more or less related to it is the handling of the parts replacement problem. Manufacturers' guarantees cover the replacement of defective parts but it not infrequently happens that a dealer is encountered who laments the length of time that is required in the adjudication of parts claims, during which time the dealer must bear the brunt of the owner's dissatisfaction.

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INAUGURATES SERVICE FOR OWNERS OF KLAXON HORNS

Road Men Sent Out by Lovell-McConnell to Test and Adjust Car Owners' Signaling Devices — Experiment is Satisfactory.

Inaugurating what is more or less of an innovation in the matter of service to the user of an accessory in that it is free and unrequested, the Lovell-McConnell Mfg. Co., of Newark, N. J., maker of Klaxon horns, has developed and is operating a department for the inspection and adjustment of Klaxon horns that are in use by motorists. While the work is as yet hardly beyond the experimental stage, it is stated that results have been excellent and well in excess of the company's expectations.

The service plan consists, thus far, in the employment of two young men of college education and mechanical training who are sent out on the road; a feature of the service is that the road men are of a class which is above a "tip" and are capable of unquestionable deportment. The two youths have been working in the metropolitan district, and their procedure is to enter, for instance, a village, secure a list of the motorists who have Klaxon horns, visit the car owner, explain their mission and adjust and lubricate the horn or remedy any difficulty which the owner may have experienced. Being specialists in this work, they are able to give greater satisfaction than is obtainable from the average garageman or supplyman.

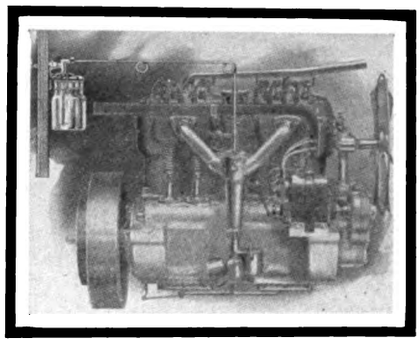
Having completed their call, they present to the car owner a card with two or three questions which he is requested to answer in a "yes" or "no" manner and mail to the factory. Thus far, however, owners have exceeded the mere affirmatives in expressing their gratification at the innovation.

For Clearing Out Carbon Deposits.

To be able to clean the carbon out of the motor in a few minutes at most any old time, with no more trouble than is involved in turning a little valve and letting the motor run, is a convenience that most anyone who has had any experience in the running of a car can appreciate, and it is a convenience that is made possible by the use of a device styled the "Ad-a-man-tor," made by the Hendricks Ad-a-man-tor Co., of Grand Rapids, Mich.

Both in principle and in construction the device is simplicity itself, consisting of a small glass reservoir clamped to the dashboard of the car, under the hood, and piped to the intake manifold. Communication between the reservoir and the manifold can be controlled by a valve on the dashboard. There are three ways in which the "ad-a-man-tor" can be used. By putting kerosene in the container and allowing a little to be drawn into the hot cylinders just before the motor is stopped at night, the oil will loosen the carbon during the night, and when the motor is started in the morning the oil, carbon and all will be blown out with the exhaust. By filling the container with high-test gasolene, or a mixture of gasolene and ether, the device can be used as an efficient primer; and for those who prefer to make use of steam for loosening carbon deposits water can be employed and drawn in with the charges and ejected with the exhaust—and the carbon.

A special clamp makes it an easy matter to attach and detach different containers, so that after the morning or evening cleaning operation has been completed the kerosene or water container can be removed and the jar of priming liquid snapped into place, the whole operation requiring only a few seconds.



AD-A-MAN-TOR CARBON REMOVER

"Boost Indiana" Tourists Get Laudation.

Just to "top off" the affair, so to speak, and fittingly bring to a close the most successful tour which the Indianapolis Automobile Dealers' Association has yet staged, an informal dinner and reception was tendered those who took part in the recent cross-continental tour at the Claypool Hotel, which is in Indianapolis, on Friday evening last, August 22nd; the tourists were the guests of the Indianapolis Board of Trade, the Indianapolis Chamber of Commerce, the Hoosier Motor Club and the Indianapolis Automobile Trade Association, which bodies combined to welcome their homecoming. The gathering was addressed by Governor Ralston, who praised the work done by the manufacturers' association in gaining recognition for the Hoosier State, and Senator William White thanked the tourists on behalf of the smaller cities of the State. Stereopticon views and moving pictures of the reception of the tourists at places along the route were thrown upon the screen, and W. S. Gilbreath, who was one of the tourists, related anecdotes in connection with each picture.

Price List Makes Big Book.

Even in this day of complete and convenient catalogs, the big price list that has been issued by the Union Hardware & Metal Co., of Los Angeles, Cal., which just has added automobile accessories, is one that deserves a good deal more than a casual glance. Not that it is an example of printers' art, but because it is of such wide scope, is so well arranged and is so thoroughly indexed that for those who want a catalog to use as a catalog it is a fine piece of work. For rapid reference, the index is letter-indexed in the margin. The paper is thin and of good quality, little space is wasted in margins, the corners are round and the whole is bound in a patent binder which permits the addition of extra leaves from time to time. The catalog covers not only automobile accessories and supplies, but a general line of hardware and carriage goods. Altogether the list contains, 972 pages, 9¾ inches wide.

Firestone's Little Brown Catalog.

Despite the fact that a pneumatic tire does not suggest much in the way of catalog possibilities, the Firestone Tire & Rubber Co., of Akron, Ohio, has made a decidedly artistic job of its latest price list —to say nothing of the primary reason for the existence of the little brown book with the embossed cover. Various types of pneumatics are clearly and well illustrated, and they are described concisely and effectively. It goes without saying that the Firestone quick detachable, demountable rims come in for a fair share of attention, as well do the Firestone non-skid treads.

Propose Open-Air Garage in Grant Park.

Another scheme has been broached as a solution of Chicago's "loop" parking problem, the municipal authorities having turned down the idea of a subway garage and having forbidden cars to be parked in the Grant Park section of Michigan avenue. The Electric Vehicle Manufacturers' Association has suggested to the South Park Commission that an open-air garage be opened in Grant Park east of the Illinois Central tracks.

Claim Policeman is Garage Owner, too.

Running a garage and being a policeman at the same time is, it seems, not permissable in Chicago, where Sergeant John B. Lacey has been charged with being the owner and operator of the Chicago Auto Livery Co., of 35th street and Grand boulevard; the business is in the name of one La Mont, but current report has it that Lacey is the real owner.

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KNOX MODELS CONTINUED PRACTICALLY UNCHANGED

Berdon Electric Lighting and Starting System on All Machines—Few Alterations in Mechanical Features.

Adhering tenaciously—and with good reason—not only to the general principles that have been features of its cars for several years, but to the very details of the designs that marked the chassis of the preceding season, the Knox Automobile Co., of Springfield, Mass., is building its cars without mechanical changes, very sensibly declining to alter designs that they know to be good until there appears a well-defined possibility of making changes for the better. But while no changes have been made, there has been at least one important addition, for the equipment of each of the four chassis models has been finished off by the installation of the Berdon lighting and starting system. This outfit, one of the cardinal features of which is a dynamo that has compound wound permanent magnets and is self-regulating through its inherent electrical characteristics, is peculiarly adapted to the Knox construction, as the unit is conveniently mounted on one of the engine legs and drives through a shaft and a pinion meshing with a spur gear on the flywheel.

While mechanical changes are conspicuous by their absence, with the exception noted, the body designs have been touched up here and there and the "little six," model 46, with a 46-horsepower motor, has been fitted with a stream-line body of the so-called "Prince Henry" type, in which the stream-line effect is carried from the radiator clear back to the rear panel of the body. An unusual item of regular equipment is a locking device in the form of a substantial bar which can be padlocked to the floor with one end hooked to the clutch pedal and the other to the gearshifting lever, effectually preventing the use of the machine.

As before, the line of chassis shown consists of four machines—two "fours" and two "sixes." The "fours" are alike, except that the model 44 has a wheelbase of 122 inches, while model 45 is 4 inches longer. In each case the motor is of 40 horsepower. Of the "sixes," model 46 has a 46-horsepower motor and a wheelbase of 134 inches, while model 66, though standing on a wheelbase of the same length, has a motor of 60 horsepower. Upon each chassis is mounted a variety of roadster, touring and closed bodies.

Apart from such dimensions as are compatible with variations in horsepower and in the number of cylinders, the Knox chasses are very much alike, the same ideas being carried out in all of them. Chief among the things to which the Knox people "point with pride"—and justifiable pride at that—is the motor, with its overhead valves and detachable cylinder heads in which the valves are seated without the intervention of cages. In the four-cylinder models the cylinders are cast individually, while in the "sixes" they are in pairs. The "snap and ginger" of the motors is attributed largely to the directness of the gas flow through the head valves and to the symmetrical combustion chamber form that they make possible.

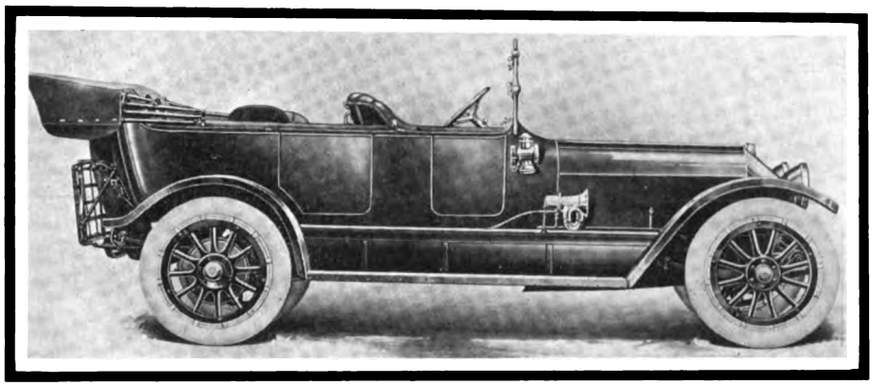
The cylinder dimensions of the two "fours" are, of course, the same; the bore is 5 inches and the stroke 5½ inches. The 46-horsepower "little six" has a bore of 4⅜ inches and a stroke of 5½ inches, while the 60-horsepower "big six" duplicates the dimensions of the "four" and has cylinders of 5 x 5½ inches bore and stroke, respectively. Incidentally, the ratings given the motors are "formula ratings," which take into account only the bore, so that the actual developed horsepower is considerably in excess of the catalog figures.

Throughout the Knox line the unit power plant idea is employed. The details, however, are peculiar to this machine. The gearcase, which is of very modest dimensions considering the fact that it contains gears providing three speeds, is connected to the crankcase by means of a pair of hollow aluminum alloy arms which extend on either side of, though they do not enclose, the flywheel. These connecting arms carry the two lugs which form the rear supports for the unit power plant, the third point—the three-point principle is employed—is at the front of the crankcase, of course.

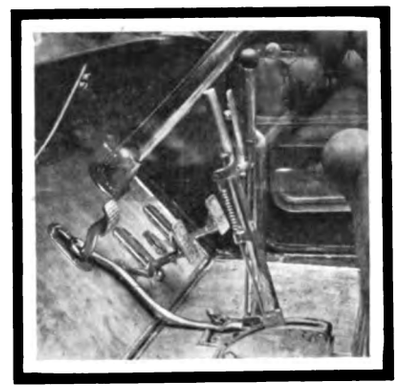
Direct pressure feed of oil to all bearings is the prominent feature of the lubrication system, which is of the pump type. Oil is forced by a plunger pump to the main bearings, through holes drilled in the crankshaft to the crankpins, and thence through conduits running along the connecting rods to the wristpins. The excess oil forced out of the bearings is sprayed and thrown upon the cylinder walls. Direct feeds are provided for the camshaft bearings. The pressure can be varied by means of a by-pass adjustable from the dash, and a gauge on the cowl-board indicates the pressure at all times. In addition to being effective in keeping a film of oil on all bearing surfaces, this system is said to be extremely economical in the use of lubricant, a gallon serving for from 600 to 800 miles, according to the size of the motor.

In all models the selective gear shifting lever is placed in the center, though the option of right or left steer is given in all chassis except model 44, the smallest of the line, which has right-hand steer. Drive from the motor to the gearset is through the Knox three-plate clutch with cork inserts. The gearset is notable chiefly for its compact design, which permits the use of extremely short and stiff shafts, and because it is put together without the use of a single nut, bolt or pin inside the gearcase. The gearset has been used, with few changes, for five seasons.

The rear axle, which is driven by means of the customary propeller shaft and bevel gears, is of the full-floating type. The live shafts are forged with notched driving disks integral. In the four-cylinder models the axle casing is of pressed steel with tubular



KNOX "LITTLE SIX," MOUNTING "PRINCE HENRY" STREAMLINE BODY



KNOX LOCKING DEVICE

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steel ends welded to it by the oxyacetylene process, while in the "sixes" the axle is made up with a cast steel central housing to which tubular steel arms are bolted by means of flanges inside the central housing. Truss-rods are fitted under both rear axles. All the axle and wheel bearings are imported ball bearings. Differential and bevel drive are mounted as a unit on a cast steel frame and can be removed without being taken apart. The front axle is the usual I-beam steel forging, and the steering knuckles are fitted with roller bearings.

The conventional arrangement is employed in the braking system; that is to say, the service brake is operated by a pedal and the emergency brake by a lever, both being on the rear wheels. A single drum on each wheel serves for the frictional surface for the expanding rings which constitute the emergency brake and the contracting bands used for service applications. Adjustment of either brake is easily and quickly effected.

Springs are elliptics in front and three-quarter elliptics in the rear; frames are of cold pressed steel, of channel section, and are "kicked up" in the rear and narrowed in front. Wheels are of wood. The tires on the smaller "four" are 36 x 4½ and on the larger four 37 x 5. On the "little six" the tires are 38 x 5 and on the "big six" 38 x 5½. On all models demountable rims are standard equipment. In all cases the tread is 56 inches.

Equipment includes, in addition to the lighting and starting system now installed as regular equipment for the first time, top with boot and side curtains, windshield, power pump, shock absorbers, spare demountable rim, tire carriers, horn, tools and the usual small things. The closed models have, in addition, interior lamps and switches, interior mirror and driver's mirror, toilet and card cases, flower vase, ventilators, racks and the usual rails.

Menace that Lies in Oily Waste.

As innocent as old, oily waste may appear to the uninitiated, it nevertheless constitutes a constant menace. Unless it is safely housed in a metal container it may cause a conflagration by spontaneous combusion. The container does not render it less likely to "go up"; it merely lessens the danger of the fire spreading.

To Make Cores for Soft Castings.

Cores for castings of babbit, lead or other soft metals are easily moulded from a mixture of glue and salt stirred together into a thick paste and shaped as desired. After the casting has hardened, the core can be melted out with hot water with no difficulty, leaving the cored parts clean and true.

PULLMAN REVISES PRICES AND ADDS LIGHT "SIX"

Electric Gearshift, Four Speeds and Left Steer Features of Latest Model — Electric Lighting and Starting Standard.

Three models which already have made their mark as Pullman products, together with a new model which is a light six-cylinder car, constitute the latest series of cars turned out by the Pullman Motor Car Co., of York, Pa. Of the three older models two are "fours" and one, the largest, a "six"; the prices of the "fours" have been cut, but a slight increase has been made in the case of the big "six." The two "fours" have motors of 36 horsepower and 44 horsepower, respectively, while the big car is rated at 66 horsepower; the smallest machine has a three-speed gearset and the other two four speeds each.

The latest model, the light "six," which will be called model 6-46, has a motor of 46 horsepower, as the name indicates. A notable feature of the car is the incorporation with the four-speed gearset of the Vulcan electric gearshift, and still another important feature is the Westinghouse electric starting and lighting system, with separate motor for starting and generator for recharging the storage battery. The propeller shaft forms a straight line with the rest of the transmission system when the car is normally loaded, giving the universal joints the lightest possible service. The rear axle is a Timken product, as is also the front axle. The steering wheel is on the left side and the gear-shifting lever in the center.

The wheelbase is long—130 inches—and the tread standard. Wire wheels are regular equipment, and are fitted with 36 x 4 tires. The body is of the touring type, for five passengers, and has Turkish upholstery, wide doors and is up to date in every respect. The finish is blue, with silver-finished radiator. The car is priced at $2,400 with regular equipment, which includes top, Collins curtains, speedometer, electric horn, windshield and other accessories that go to make the modern car complete and ready for the road.

A number of changes have been made in the three models that are continued from the previous series, and most of them are common to all the cars. The backs of the bodies have been given a graceful curve instead of being made straight; the cowl board, upon which the instruments are mounted, has been lowered and the windshield, which now is of the built-in type, made higher. In the "big six" there is a foot scraper on the running board, a ba[g]rack in the top, a cocoa mat in the tonneau, a new special tool equipment and a powe[r] tire pump. In all models the gasoline tank, under the front seat, can be removed by taking out four screws. A four-gallon emergency reserve tank, inside the main tank, is controlled by a four-way cock which also serves as a gasolene lock. The piston construction has been so improved that it is said to tbe impossible to get an excess of oil above the pistons, the result being smokeless running. The level of the oil in the crankcase is accurately adjustable and there is a sight feed on the dashboard.

The equipment includes such new features as the Collins side curtains, adjustable combination tail light and license carrier, tonneau lamps on the "big six," improved lamps, and so on. While the Vulcan electric gearshift is regularly fitted only to the "light six," it will be applied to any of the other machines at an advance in price of $250. Wire wheels, which are regular equipment on the "light six," cost $50, $60 and $75 extra on the small and large "fours" and the "big six," respectively. In the case of the "big six," an option is given of Brewster green or blue, with black hood and fenders and wheels finished in natural wood. Other models are finished in blue.

Changes have been made in prices all along the line. The smaller "four," the former price of which was $1,675, now sells for $1,575, without electric starting and lighting, or $1,775 with the Westinghouse system. The larger "four" has been reduced from $2,150 to $1,975, while the price of the "big six" has been increased and now is $2,850. The light "six" costs $2,400.

When Use of Pliers Becomes Abuse.

A small pair of cutting pliers is extremely useful in its place; but its business is not cutting stuff that is so heavy that the cutters scarcely can be forced through. Overworking the pliers soon destroys them, and yet this very thing is constantly being done. Cutting pliers should not be used on material that they will not go through with reasonable ease, except in the case of the heavy tools, which will stand all the strength a man can exert on them.

One Good Way to Remove Insulation.

Removing insulation from electrical conductors made up of fine strands of wire is a matter of some difficulty, especially to the inexperienced "hand," if none of the strands are to be severed. It is very easily done, however, if the insulation is set on fire and allowed to burn off to the desired point. The wires will not be injured, and if there is any tendency toward brittleness the heating will remove it and leave the metal soft and pliable.

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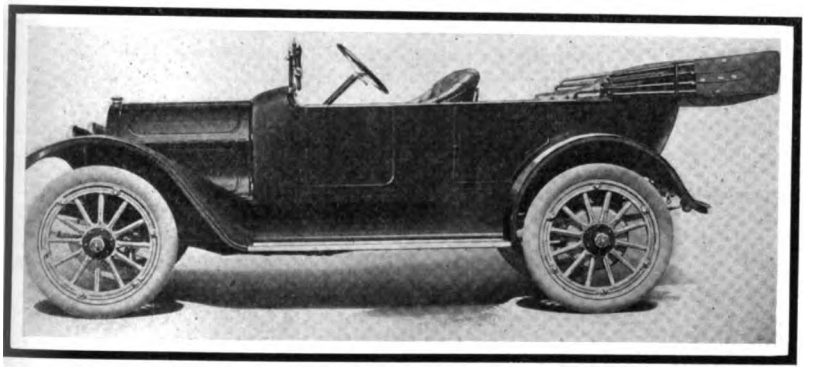
›RE OUTFIT, LESS PRICE FOR LATEST REO MODELS

:ctric Lighting and Starting Sys- em Installed and $220 Lopped off Cost — No Important Mechanical Changes.

ı bringing out what is styled the "fall es" of the 30-horsepower Reo car, the › Motor Car Co., of Lansing, Mich., has .e two things that are notable and appar- ly incompatible. The car has been im- ter design and quality even than that which it was necessary to pay extra for previously. The windshield now supplied is of the rain vision, ventilating type.

The body has been entirely redesigned and is somewhat lower hung than before and, moreover, is of even better appearance, as might be expected. The touring car has been given a cowl over the dash, and under the edge of the cowl is the instrument board, in which the electric plant instruments, speedometer and so on are set with their dials flush with the polished surface of the wood.

The mechanical changes have been few,



REO FIVE-PASSENGER TOURING CAR, WHICH SELLS FOR $1,175

'ed by the addition of a good deal of pment and a number of detail changes, the price has been reduced $220; the hine now costs $1,175 complete. At the e time the main features of the car re- ı unchanged. Except for minor al- :ions, the power plant, the entire trans- ion system and the other parts remain ıey were.

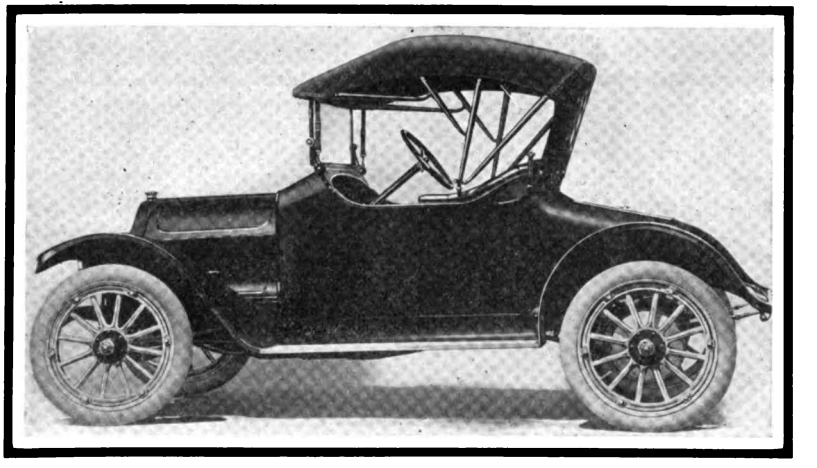
›nspicuous among the new things that been added to the equipment of the is the electric starting and lighting :m that has been built into the single sis that is used for both touring car roadster. Formerly a lighting system installed, the source of current being a :ry; but the new system includes a gen- ›r—in fact, a complete, self-contained ing and lighting plant. And while in er models it was necessary to pay an . $100 for top with side curtains, wind- d, speedometer, etc., the cars of the lat- eries have these necessities as part of standard outfit, to say nothing of an demountable rim and an electric horn. e searchlights are fitted with a dim- attachment which makes them unob- ›nable for urban driving—and also s to keep the car out of reach of the arm of the law, wherever it interests in such things. The tire carrier is of v pattern and serves also to support ail light and license bracket. All the ment that goes with the car is of bet- the chief among them being in the change-speed gearing, which has been made more smooth-running and quiet than before. The tires still are 34 x 4 inches and the wheelbase remains at 112 inches and the tread is, of course, the standard 56 inches.

Though the motor is rated at 30 horsepower, it is claimed that its four cylinders of 4 inches bore and 4½ inches stroke will work up to a considerably higher power. The cylinders are cast in pairs. The valves are particularly well taken care of in the matter of cooling, the exhaust valves being directly in the path of the incoming water as it is pumped from the radiator. Another valuable feature that is embodied in the latest Reo, as it was in the previous model, is the main bearing adjustment. All three of the crankshaft bearings can be adjusted from the outside, it being unnecessary to go through the usual process of taking down the lower half of the crankcase. Half an hour is said to be sufficient time in which to make the main bearing adjustments.

From the motor power is transmitted through a multiple disk clutch, which has an automatic disengaging device preventing the dragging of the disks. The change-speed gearing provides three forward speeds and is controlled by a central lever with a "cane" handle—a feature that has been worked out to the limit of convenience in the Reo. The handle has a very short swing in four directions, and the manipulation of the gears is simple and easy in the extreme. Both brakes are operated by pedals. As before, the steering wheel is on the left side.

Quiet running is one of the features of the Reo, and the use of steel cables instead of rods has had not a little to do with bringing about this desirable state of affairs. The cables, of course, do not rattle, and are amply strong for braking purposes. The clean appearance of the car and the simplicity of the actual work of controlling it are enhanced not a little by the fact that no emergency brake lever is employed. Both brakes are pedal operated, and the hands have only the steering, motor control and gear-changing to attend to.

While the Reo finish was very considerably improved in the previous models, it has been still further bettered in the present "edition"; and though an attractive exterior does not by any means make a good interior, it is only fitting that one should match the other.



REO ROADSTER, SHOWING LINES OF NEWLY DESIGNED BODY

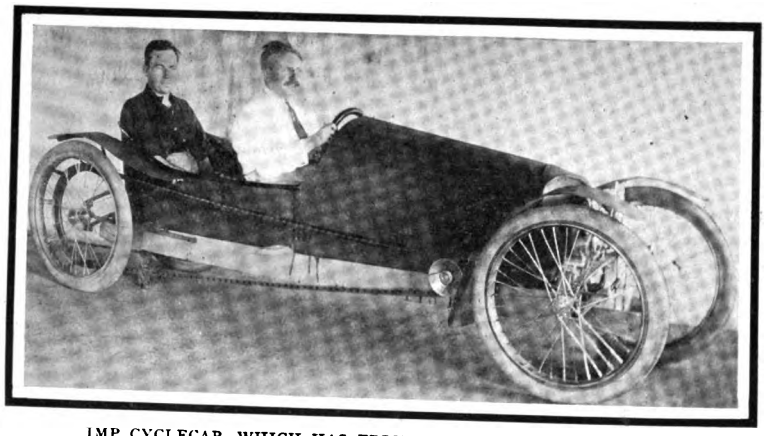
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HERE'S McINTYRE'S IMP; IT'S A REAL CYCLECAR

Has no Axles, no Gears, and the Engine Starts from the Seat — Air-Cooled Motor of 10 Horsepower and Belt Drive.

Almost without intimation of its intention to do so, the W. H. McIntyre Co., of Auburn, Ind., which has been engaged in the manufacture of vehicles of various kinds for well-nigh half a century, has taken up the production of "sure enough" cyclecars and has brought out a machine which it has christened "Imp" and which embodies a number of features that have been well tested in cyclecars of foreign construction.

A glance at the accompanying illustration will show that the car carries two passengers seated tandem, that the drive is through very long belts and that, as is usual, the wheels are of wire. Under the hood, which, incidentally, is almost as much cowl as hood, is a two-cylinder motor, air-cooled, with the cylinders set at 45 degrees, rated at 10 horsepower at 1,500 revolutions per minute. The motor is set close to the open front of the hood with its shaft fore-and-aft and a deflector turns part of the air current on the back of the engine to facilitate cooling.



IMP CYCLECAR, WHICH HAS FRICTION DRIVE AND NO AXLES

Also under the hood is the friction change-speed gear, which is of small size because of the small size and high speed of the engine. The control lever is pivoted to the cowl and is close to the steering wheel. The countershaft of the friction gear carries the two small pulleys for the V-section belts, which are exceedingly long and which constitute one of the features for which claims are made. Long belts are said to form an exceedingly smooth drive, to eliminate danger of overloading the friction disks and to wear well—in fact, the makers state that a single set of belts should give a service of about 10,000 miles. The rear wheel pulleys are 20 inches in diameter and are utilized also as brake drums, V-shaped blocks of hard wood forming the friction shoes.

An unusual form of construction is embodied in the spring suspension. The machine has no axles, properly speaking, but the stubs upon which the wheels turn are carried on the ends of two pairs of transverse springs. The two springs of each pair are placed one above the other and the forgings carrying the stub axles are bolted to the ends. This construction has several arguments in its favor. It is light and simple, and gives extremely easy riding. There is no unsprung weight except that of the wheels. The resilient springs are said to be capable of withstanding shocks that might well spring axles of the rigid type. The frame of the car is underslung from the springs, and though the center of gravity is so low that it is said to be possible to tip the car to an angle of 45 degrees, with passengers on board, without upsetting it, there is a road clearance of eight inches.

The steering gear is the acme of simplicity. The wheel, 14 inches in diameter, tops a shaft which extends, unbroken, to the forward spring; on its end it carries a pulley on which is wound a steel cable, the ends of which are attached to the steering knuckles, which are connected across by the usual drag link. A spring device prevents slackness in the cable. The arrangement is said to be nearly irreversible and to work very well indeed.

The wire wheels, which are made with tangent spokes, are 28 inches in diameter and are fitted with 2½-inch standard clincher tires, front and rear wheels and tires being of the same size. The wheels run on ball bearings—in fact, ball bearings of the radial type are used throughout the car. A good idea is the fitting of a mechanical motor starter, consisting of a cable w... when pulled, acts on the crankshaft ... "turns the motor over"; a clutch ... when the motor starts and a spri... winds the cable after a pull. The s... works from the seat.

The wheelbase of the car is 10... and the tread 36 inhces. The maxi... speed is given as 50 miles an hour, ... is claimed that the machine is capable ... covering from 50 to 70 miles on a gall... gasolene. The tandem seats are deep ... well upholstered, and the edges als... cushioned. In the rear of the body th... is a tool box that is of ample size for ... purpose, and also a space in which a l... luggage may be stored. The machi... weighs 450 pounds and the price is $5... complete with lamps and horn.

Repairs Six Tubes in 20 Minutes.

A strong appeal is made to the business instinct of the garage proprietor by the ... of steam vulcanizers brought out by the Simplex Steam Vulcanizer Co., of Omaha, Neb. The point made by the manufacturers is that where there is plenty of work to ... done the Simplex vulcanizer will do it quickly because in the No. 6 model, for instance, no less than six tubes can be repaired every 20 minutes, so that a man can be kept busy as long as there is anything to be done. A single tube size ... inches long can be repaired at one setting. Attachments for all sorts of casing repairs as well as retreading, complete the equipment. Other models are made for less extensive requirements, the smallest being No. 1, which is intended particularly for the private owner, and will make small casing repairs and mend tube holes up to 3½ inches. In all models there is a sheet of water between the fire and the work and burning is thus guarded against. Even the smallest outfit has a pressure gauge.

Grease that May Cause Growls.

Transmission gears require lubrication—must have it, in fact—as nearly every one knows; but not every one knows that too much grease is likely to make the gears almost as noisy as too little. It is poor practice to fill transmission cases to the brim in an attempt to silence the gears; the better way is to fill the case about half-way up the gears—unless the manufacturer recommends some other limit.

Nail Clip as Insulation Stripper.

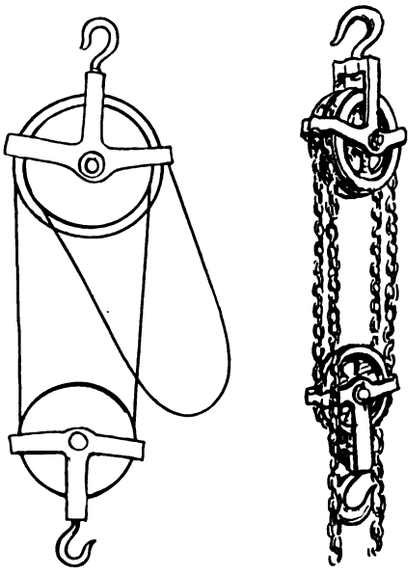
One motorist who does all his own "tinkering" and is quite proud of the fact has evolved an unusual method of stripping the insulation from the ends of wire. Instead of using a knife, which endangers the wire, he uses an old nail clip.

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HOISTING BURDENS THAT HOLD DOWN PROFITS

Part That Differential Hoist May Play in Saving Labor in the Garage or Repair Shop Where Heavy Lifting Is Required—Types of Mechanisms Designed to Aid One Man in Doing Work of Many.

If the repair-shop of John Quincy Davis had been differently laid out, or if it had been bigger, or if the character of the general run of work had been something else besides what it was, it is possible that the single portable crane installed to decrease internal resistance to the flow of profits would not have been sufficient to lift all the losses that were susceptible of being hoisted by such means. But it happened that Davis's hoisting work was of an intermittent character, the shop was not so large that the apparatus was likely to be required in two places at once, and there were no jobs, except once in the proverbial blue moon, that the portable crane described in various forms last week in Motor World could not handle in a perfectly satisfactory manner.



DIFFERENTIAL PRINCIPLE AND PRACTICE

Over on the other side of the town, however, Llewellyn Lloyd, a Welshman, whose expression and manner perpetually hovered on the verge of good humor but never got any further, had a larger establishment and one that was very differently laid out. Davis did all his work on the ground floor. Lloyd's ground floor area was somewhat restricted, so he installed his machine tools on the second floor and rigged up an apparatus that was a cross between an elevator and a dumb-waiter for getting heavy stuff from one floor to another. On the ground floor he used a portable crane similar to Davis's for moving stuff from cars to the elevator and back. Upstairs, however, things were pretty closely spaced and, despite the small size of the portable crane, it could not have been moved around without interfering with fixtures and running a good deal of risk getting mixed up with belts and so forth. So Lloyd installed two chain hoists, one running on a trolley over the long bench where motors were deposited for overhauling, having one end close to the little elevator, and the other hoist over the big lathe—the only machine in the shop that took in work too heavy for a man to handle.

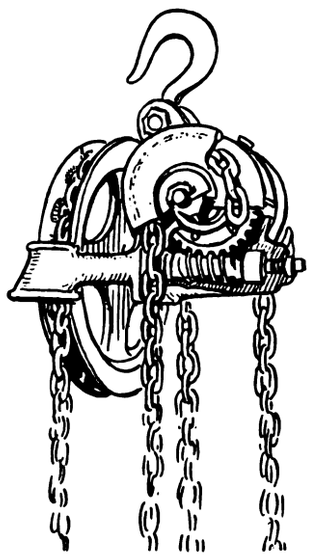


FORD PLANETARY REDUCTION

Bench Hoist Cared for Most of Work.

Heavy things were lifted off the elevator by the bench hoist and dropped on any part of the bench or else on a little truck, upon which they were wheeled anywhere in the shop they might be wanted. Anything that did not either stay on the bench until reduced to small units or else go to the big lathe usually was small and easily handled. The exceptions occurred so seldom that the extra time needed to handle them did not count for much in the long run. So Lloyd's two chain hoists covered his shop very efficiently, all things considered.

There had been a time, however, when the men had had to "horse" everything around, and life was just one temporary hoisting rig after another. The worst of it was getting the motors upstairs for overhauling. Lloyd started by chopping a hole in the floor and rigging a chain hoist over it; but, good though the chain hoist is in its proper place, it is far too slow for making frequent lifts from one floor to another, and the miniature elevator with its little electric motor followed; then the chain hoist was rigged over the bench and another, of lighter construction, hung over the lathe.



HARRINGTON SCREW HOIST

Let it not be thought for one moment that Lloyd simply went out and bought a couple of chain hoists—just like that! He looked through the advertising columns of a few technical journals and speedily came to the conclusion that picking out a chain hoist was going to be just about as hard as picking out a wife—a job in which Llewellyn had not been wholly successful. In fact, there was a tradition in the trade that before his marriage Lloyd had been a young fellow of extreme geniality, and that afterwards—but that's something else again and has nothing to do with the hoists. What really counts just now is that Lloyd sent for whole flocks of catalogs and before he sent in his first order knew pretty well how all the leading styles of hoists were constructed and had formed his own opinion as to their respective merits.

Though Lloyd was not familiar with the

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many geared hoists on the market until he began to investigate with a view to buying one, he knew well enough what a differential hoist was; for the differential hoist is the simplest, the most widely used and the cheapest kind, and for light work, or for occasional use on moderately heavy work, is very satisfactory. There are few manufacturers of chain hoists who do not include a differential in their lists, but such is the simplicity of the device that there is but little opportunity for variation in construction.

Operating Principle of the Hoist.

The accompanying diagrammatic illustraiton shows the principle of operation of the differential hoist, which is a little difficult to work out from the picture of an actual hoist. There are three principal parts —the double sheave at the top with suspension hook, the single sheave at the bottom with the load-carrying hook, and the endless chain connecting them. One of the grooves in the double sheave is a little larger, in the matter of diameter, than the other, the usual difference being one "pocket," a pocket corresponding to a sprocket tooth. The chain is endless, and part of it hangs loose for pulling and hauling. Starting from the loose portion, the chain passes over the larger of the upper sheaves, runs down and around the lower sheave and up and around the smaller sheave of the pair, from which it runs back to join the part hanging from the larger sheave.

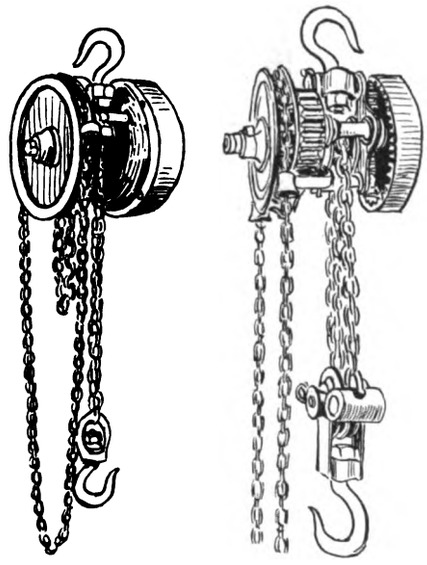
Different-Sized Wheels Give Leverage.

The hoist is operated by pulling on the loose part of the chain; pulling on the chain hanging from the larger sheave serves to lower. When the pulling part of the chain is hauled upon the double sheave is turned and the chain from which the load hook hangs is drawn up on one side and let down on the other; but as one sheave is of greater diameter than the other it will take up (or let down, as the case may be) faster than the other, as both turn together. It is this differential feature that gives the hoist its name and its leverage.

In practice the difference in the two diameters is so slight that the leverage of the larger over the smaller is not sufficient to overcome the friction of the bearings and chains, and so a load will remain stationary at any point without special means for holding it, such as brakes. Differential hoists are made to hoist up to 3 tons—rarely more. Other types usually are built to lift up to 10 tons, and in some cases up to 20 tons and even more, and these figures convey a fair idea of the comparative efficiencies of the differentials and the more complex and also more efficient kinds.

An example of a well-made differential hoist is that manufactured by Edwin Harrington Son & Co., Philadelphia, and is shown in one of the accompanying illustrations. The smallest size will lift a maximum of 500 pounds, and to move this load requires a pull of 72 pounds on the hand chain. A 1,000-pound hoist requires 122 pounds to move full load, and a 1-ton hoist calls for 216 pounds.

Where greater efficiency is required in a small hoist, or where it is desired to lift a considerable weight by hand, various systems of external and internal spur gearing are employed, as well as worm gearing. The Harrington company makes a worm hoist—or, as they call it, a "screw" hoist —that is not only a good hoist, but is a



SPIEDEL AND ROUND TYPES

good example of its class. A chain wheel of relatively large diameter is mounted on a shaft upon which is formed a worm; an endless chain running over the wheel is operated by hand and constitutes the means of applying power. A worm gear meshes with the worm, as the illustration shows plainly, and is fixed to the center of a shaft upon which two small chain wheels are carried, one on either side of the worm gear.

Lifting and Pulling Weights Compared.

Two chains, one running over each of the small chain wheels, are attached to the lifting hook, the idea being to balance the weight and pressure on either side of the worm gear and to afford plenty of chain strength; each chain is capable of sustaining more than the full rated capacity of the hoist. An idea of the relative efficiencies of the differential and the worm hoists—both of the same make—may be gained from the fact that the 500 pound differential takes a pull of 72 pounds, as already has been stated, while the worm type of the same capacity takes a 20-pound pull for full load. With a worm hoist a heavy man can raise 3 tons, for the pull required is but 163 pounds; a differential hoist for the same weight calls for a pull of 557 pounds, which is rather too much for anything but a professional fat man. Other manufacturers turn out screw hoists, and good ones, but for the most part they are built on the same principles and differ little in their essential features from the one illustrated.

Utilizing the Planetary Gearset.

The worm and gear system of power transmission is not the only one that is common to both automobiles and hoisting devices. The "old reliable" planetary gear has found a mighty useful job in a hoist, and the Ford Chain Block & Mfg. Co. is one of the concerns that put it there. The gears look just about the same in a hoist as they do in the automobile gearset, leaving out of consideration the extra pinions and the brake bands and drums of the car gears, and they are almost—not quite—as tricky for the uninitiated to follow in their operation. In the picture the Ford hoist gears are shown uncovered. The large wheel is operated by the hand chain and drives through the intermediate planetary gearing, which gives a large ratio of reduction, the wheel carrying the hoisting chain. The hoisting chain wheels are directly under the hook. The load is held by a ratchet device. The Tribloc hoist, as the Ford people call it, is made in sizes from half a ton up to the extraordinary capacity of 40 tons. The half-ton size requires a 62-pound pull and the 1-ton 82 pounds.

Hoists That Use Plain Spur Gearing.

Ordinary spur gearing is employed as a means of reduction in a number of hoists, including one made by D. Round & Son, Cleveland, Ohio. The hand-chain sheave and a casing containing the gearing are mounted on opposite sides of the smaller sheave over which the lifting chain runs; this sheave is mounted on a sleeve turning on the steel shaft which runs through from the hand-chain sheave to the first pinion of the gearset, and which, of course, transmits power to the latter through the gears, which are enclosed in a tight casing and well protected from dirt and thoroughly lubricated. These spur-geared Round hoists are made in various sizes from 500 pounds capacity upward, and are said to have an efficiency of 80 per cent. The brake mechanism, the function of which is to hold the load stationary, is of the friction-and-ratchet type. While it prevents the running down of the load under its own weight, it does not interfere in any way with hoisting

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or with the lowering of the load by pulling on the "down" chain.

It is a tedious job to hoist a comparatively light weight with a tackle of considerable capacity, because the gearing necessarily is so low that the motion is exceedingly deliberate. Yet there are many cases where the same hoist must be used for both light and heavy work. Recognizing this, J. G. Speidel, of Reading, Pa., has devised a clever and yet extremely simple method of obtaining two speeds from his hoist, which, by the way, is of that type in which the gearing is divided and enclosed in two casings, one on either side of the central load-chain sheave; the hand-chain sheave of course is mounted with one of the gear-cases. The two-speed device is almost ridiculously simple.

How Speed of Hoist May Be Varied.

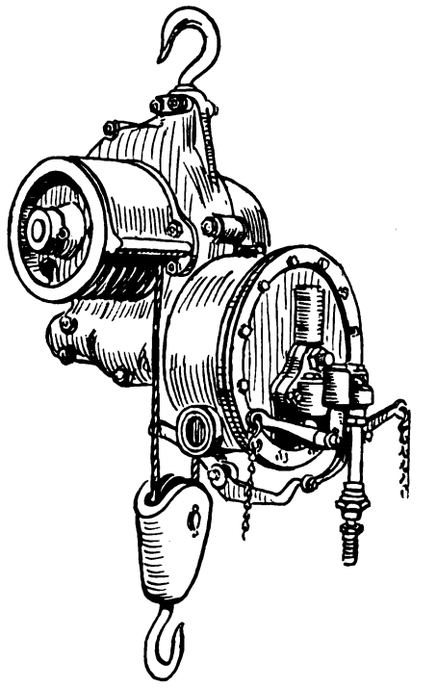
Ordinarily the hoisting chain is double—that is to say, one end is passed over the hoisting sheave and the other end is fixed to the frame of the hoist, while a pulley carrying the load hook is carried in the "bight." For heavy loads the hoist is operated in the ordinary way, with the chain running freely through the hook pulley. For higher speed the chain is made fast to the hook pulley by an ingenious clip, and the hoisting is done direct through one strand of the chain, the other merely dangling loose. This just doubles the speed and, of course, halves the lifting power. When the load is lowered to the height at which the chain was clipped to increase the speed, the clip automatically disengages and the hoist resumes operation in its normal condition, with full power and slow speed. The Speidel hoists are made in a very wide range of capacities, the smallest lifting half a ton and the largest a weight equal to that of a dozen big cars.

Hand Power Generally Sufficient.

There are mighty few shops where anything more than hand power is required for hoisting purposes—especially in view of the fact that hand-operated hoists are made for loads as heavy as 40 tons; but occasionally there are special cases where the greater speed of a power hoist may be of considerable value. Just as an example of the clever designing that is done in this particular part of the mechanical field, one of the accompanying illustrations shows an air-motor hoist built by the Ingersoll-Rand Co., of New York and styled the Imperial hoist.

The motive power of the Imperial air hoist consists of a little air engine mounted with the gearing overhead, the whole forming a compact unit. The engine has three radial cylinders which revolve about the single crank, and there are no separate valves, there being ports cut in the crank. The crank is of large diameter, not only to permit the port construction but also to provide a large bearing area. The reduction gearing is of the worm type, and owing to the irreversible nature of the worm no brake is necessary, the worm holding the load suspended at any point. All the working parts are enclosed in tight casings and are flooded with oil.

The lifting hook is hung from a steel cable winding on a drum; control of the motor is effected by two chain pulls, one of which opens the air throttle while the other, of course, closes it. The Imperial hoist is made for loads of from half a ton to



IMPERIAL AIR LIFT

five tons, there being two sizes of motors, one developing two horsepower and the other 3½ horsepower. Of course, it is necessary to have a supply of compressed air, which must be carried to the hoisting motor through a flexible hose.

Power Hoists and Many Other Types.

These are by no means all the hoists, and are not even all the really good hoists, that Lewellyn Lloyd studied and pored over before he made his choice. It would take a good deal more than a whole number of Motor World to touch upon all of them. But enough is plenty, as Mawruss said to Abe, and there are few that differ much from the types described—that is, small hoists such as are suitable for use in repair shops and garages. Power hoists form a large group of their own, which is subdivided according to the source of energy, and there also are various kinds of trolley hoists, truck hoists and so forth and so on. Lloyd found what he wanted without going through the whole list, and he was so well satisfied with his chocie that it did not even occur to him to wish he had looked up some of the others before buying.

"Artful Dodger" Flourishes in Russia.

The "artful dodger" in business is not confined to America, as is indicated in a consular report from Odessa, Russia, which advises foreign capitalists to become familiar with Russian business law before entering the domain of the Czar of all the Russias; fraudulent bankruptcies are common, it is stated, and methods of avoiding financial responsibility are numerous and easy.

"The dishonest trader works on a 5 per cent. profit for a few years," says the consul, "thereby getting the bulk of his special line of trade into his hands, and then goes bankrupt, eventually paying about 20 cents on the dollar. Sometimes a firm can escape liability for its debts by changing its name. The newly-named firm, which may be the same as the original firm in everything except name, cannot be sued for the liabilities of the former. There is no remedy, unless it can be proved that the change has been made for fraudulent purposes, proof of which is probably very difficult to obtain, and even if obtainable the suitor must overcome endless legal stratagems and devices, with the probability that, when a verdict is at last obtained, the defendant may declare himself bankrupt and leave the plaintiff to pay his own costs. New legislation approved by the Council of Ministers is being introduced to remedy this state of affairs."

Startling Building Proposed for Denver.

If plans which now are brewing ever come to anything, the City of Denver, which is in Colorado, will have one of the most peculiar looking buildings in the world and it will be put to a use that is absolutely unique—no other word describes it. It is proposed to build a reinforced concrete structure some 200 feet in height, up which visiting motorists may drive their cars to an extensive platform at the top, where a commanding view of the city will be obtainable. No! The cars will not be driven right up the sides. They will be driven around a spiral driveway leading to the top. It is not stated whether the roadway will be wide enough to permit those whose cars balk at the incline to turn around and come down again.

To Hold Small Machine Screws.

One very good way of holding small screws that require to be put in places that are almost inaccessible is to push the screw through a piece of rather stiff paper. Another way is to hold the screw with a loop of soft wire around its head.

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1,050,491. Tire Valve. Maximilian Charles Schweinert, West Hoboken, N. J., and Henry P. Kraft, New York, N. Y., assignors, by mesne assignments, to A. Schrader's Son, Incorporated, New York, N. Y., a Corporation of New York (incorporated in 1906). Filed May 26, 1906. Serial No. 318,902. (Tire valve with automatically expanding packing.) 6 claims.

1,050,503. Magneto Construction. Bert Whelchel, Indianapolis, Ind., assignor to A. C. Ayres, Indianapolis, Ind. Filed May 12, 1911. Serial No. 626,874. (Magneto with frame in a single casing.) 5 claims.

1,050,522. Change-Speed Gearing. Frederic Jean-Baptiste Damaizin and Jean Pujos, Paris, France, assignors, by direct and mesne assignments, to Societe Anonyme l'Evolution Automobile (Brevets D & P), Paris, France. Filed May 28, 1910. Serial No. 563,842. (Change-speed gear with constantly meshed gears.) 25 claims.

1,050,571. Clutch Controller. Irvine M. Smith, Tillamook, Ore. Filed Mar. 7, 1911. Serial No. 612,768. (Dashpot for clutch control.) 1 claim.

1,050,581. Tire. Benjamin Walter, Livermore, Pa. Filed Apr. 17, 1912. Serial No. 691,292. (Tire with cellular inner tube.) 1 claim.

1,050,624. Wheel Rim. George A. Distelhorst, Leshara, Neb., assignor of one-third to John A. Swanson, Omaha, Neb. Filed Nov. 13, 1911. Serial No. 660,016. (Detachable rim and fastenings.) 1 claim.

1,050,625. Internal Combustion Engine. Henry A. Dortch, Hayti, Mo. Filed Dec. 27, 1910. Serial No. 599,328. (Double-acting engine with piston valve.) 1 claim.

1,050,674. Tire for Vehicle Wheels. Alonzo C. Mather, Chicago, Ill. Filed Feb. 1, 1909. Serial No. 475,397. (Sectional tire with sections supported by radial coiled springs.) 1 claim.

1,050,686. Brake Mechanism for Automobiles. Robert S. Pelton, Monticello, N. Y. Filed Jan. 4, 1912. Serial No. 669,315. (Means for operating either one of a pair of brakes independently.) 2 claims.

1,050,727. Anti-Skidding Tire Armor. Daniel Fasold, Keswick, Iowa. Filed Oct. 6, 1910. Serial No. 585,694. (Tire armor of U-shaped connected sections.) 2 claims.

1,050,739. Starter for Explosive Engines. Robert C. Hull, Philadelphia, Pa. Filed Aug. 26, 1912. Serial No. 716,992. (Electric starter with irregular torque, maximum torque occurring at points of maximum resistance to turning effort.) 16 claims.

1,050,761. Driving Mechanism for Automobiles. Absalom F. Clark, Philadelphia, Pa., assignor to Simon Freidberger, Philadelphia, Pa. Filed May 4, 1912. Serial No. 695,169. (Spring-supported electric motor with shaft drive.) 6 claims.

1,050,779. Internal Combustion Engine. William F. Miller, Newton, Mass. Filed July 19, 1905. Serial No. 270,357. (Two-cycle motor with fuel injection system.) 16 claims.

1,050,790. Tire Tread. Fred McRea Bawden, Toronto, Ontario, Canada. Filed Jan. 13, 1912. Serial No. 671,082. (Tire tread with V-shaped ribs.) 3 claims.

1,050,799. Igniter for Gas Engines. Stephen F. Briggs, Milwaukee, Wis., assignor to Briggs & Stratton Company, Milwaukee, Wis., a Corporation of Wisconsin. Filed Mar. 28, 1910. Serial No. 552,013. (Primary circuit controlled by magnetic switches.) 13 claims.

1,050,810. Motor Vehicle. Edward P. Cowles, Warren, Ohio, assignor, by mesne assignments, to Packard Motor Car Company, Detroit, Mich., a Corporation of Michigan. Filed Sept. 6, 1901. Serial No. 74,497. (Steering pivots within enlarged hub.) 8 claims.

1,050,811. Lubricating System. Paul Daimler, Cannstatt, Germany, assignor to The Firm of Daimler Motorengesellschaft, Unterturkheim-Stuttgart, Germany. Filed Sept. 5, 1912. Serial No. 718,665. (Oil pump with differential cylinder and piston, and piston valves.) 3 claims.

1,050,826. Clutch Pedal and Throttle Control for Automobiles. Milton T. Hancock, Jr., Los Angeles, Cal. Filed Aug. 4, 1911. Serial No. 642,369. (Throttle control connected to clutch pedal.) 7 claims.

1,050,853. Spring Wheel. Joseph Sanders, Washington, D. C. Original application filed Mar. 6, 1912. Serial No. 681,883. Divided and this application filed July 3, 1912. Serial No. 707,602. (Wheel with bunched strands of spring wire under tread.) 7 claims.

1,050,853. Wheel. Harlow Orville Shockley, Darlington, Wis. Filed May 14, 1912. Serial No. 697,326. (Wheel with pneumatic cushion surrounding hub.) 1 claim.

1,050,886. Vehicle Tire. Anson B. Wetherell, Pittsburgh, Pa. Filed Feb. 23, 1910. Serial No. 545,404. (Self-inflating pneumatic tire.) 2 claims.

1,050,888. Variable Speed Transmission Mechanism. John G. White, Newberry, Fla. Filed May 22, 1912. Serial No. 699,030. (Change-speed gear having a driving pinion meshing with concentric rings of teeth formed on the face of a disk.) 4 claims.

1,050,950. Resilient Wheel. Ernest E. Julien, Watseka, Ill., assignor of two-thirds to Zedok P. Watkins and James H. Stone, Watseka, Ill. Filed Nov. 15, 1911. Serial No. 660,329. (Wheel with spring-and-plunger spokes.) 1 claim.

1,050,986. Bearing Adjusting Means for Axles. Emil A. Nelson, Detroit, Mich., assignor to Hupp Motor Car Company, Detroit, Mich., a Corporation of Michigan. Filed Mar. 1, 1912. Serial No. 680,983. (Means for adjusting bearings of live rear axles.) 5 claims.

1,050,988. Transmission Gearing. Nils Nilson, Leonard Nilson and Harold Nilson, Wayzata, Minn. Filed May 29, 1911. Serial No. 630,225. (Combination of friction disks and gears.) 8 claims.

1,051,025. Incased Universal Joint and Casing Thereof. Clarence W. Spicer, Plainfield, N. J. Filed Sept. 12, 1906. Serial No. 334,222. (Universal joint with automatically adjusted hemispherical dust cap.) 11 claims.

1,051,030. Automobile Fender. Wilson E. Symons, Chicago, Ill. Filed May 15, 1911. Serial No. 627,256. (Movable fender controlled from seat.) 22 claims.

1,051,053. Vehicle Wheel. Charles Altman, Wilber, Neb. Filed Feb. 27, 1912. Serial No. 680,234. (Wheel with spring-and-plunger spokes.) 1 claim.

1,051,055. Power Transmission Gearing. Vincent G. Apple, Dayton, Ohio. Filed June 15, 1911. Serial No. 633,235. (Variable speed gear for starting and lighting motor-generator.) 10 claims.

1,051,079. Demountable Rim and Tire Fastener for Wheels. Charles F. Burkhart, New York, N. Y., assignor to Walter J. Reiman, Buffalo, N. Y. Filed Apr. 10, 1912. Serial No. 689,722. (Demountable rim operated by rack-and-pinion.) 3 claims.

1,051,090. Air Pump for Inflating Automobile Tires. John Desmond, Chicago, Ill., assignor, by mesne assignments, to William S. Potwin, Chicago, Ill. Filed Jan. 20, 1909. Serial No. 473,323. (Air pump operated by shaft projecting through hub of starting crank.) 5 claims.

1,051,117. Tire. Fred W. Karches, St. Louis, Mo., assignor to Fidel Ganahl Lumber Company, St. Louis, Mo., a Corporation of Missouri. Filed June 14, 1912. Serial No. 703,684. (Tire with rubber cushions and spring-supported sectional tread.) 9 claims.

1,051,122. Means for Supplying Explosive Mixture to Explosive Engines. Stephen S. Krayer, St. Louis, Mo. Filed Nov. 18, 1911. Serial No. 661,000. (Double carburetter arrangement with automatic control.) 2 claims.

1,051,130. Exhaust Muffler. Charles F. Lattime and George W. Lattime, Newburyport, Mass. Filed Oct. 23, 1912. Serial No. 727,472. (Water-cooled concentric-shell muffler.) 6 claims.

1,051,132. Elastic Wheel. Jules Leonard, Parc-St.-Maur, France. Filed Feb. 7, 1911. Serial No. 607,208. (Wheel with rubber cushion between inner and outer rims.) 1 claim.

1,051,178. Elastic Wheel. Thomas Whitehead, Blackpool, England. Filed Dec. 12, 1911. Serial No. 665,323. (Wheel with coil spring spokes.) 4 claims.

1,051,236. Automobile Wheel. Albert Johnston, Grat Falls, Mont. Filed Aug. 16, 1912. Serial No. 715,478. (Wheel with compressed air chamber in hub and plunger-and-cylinder spokes.) 4 claims.

1,051,255. Change-Speed Gearing. Lars August Peterson, Stockholm, Sweden. Filed Mey 27, 1912. Serial No. 700,114. (Pinion meshing with gears of a stepped cone.) 8 claims.

1,051,276. Resilient Wheel. James Seadler, Sacramento, Cal. Filed Oct. 14, 1912. Serial No. 725,632. (Wheel with springs between inner and outer rims.) 3 claims.

1,051,281. Automobile Transmission Mechanism. Samuel L. Slaughter, Richmond, Mo. Filed Feb. 16, 1912. Serial No. 677,927. (Friction gear with independent drive to each rear wheel.) 5 claims.

1,051,288. Shock Absorber. Paul Szydlowski, Boston, Mass. Filed June 5, 1912. Serial No. 701,915. (Hydraulic shock absorber.) 14 claims.

1,051,289. Internal Combustion Engine. Walter K. Thomas, New York, N. Y., assignor to himself as trustee. Filed Dec. 8, 1911. Serial No. 664,660. (Four-cycle motor with cylinder ports and rotary valve.) 18 claims.

1,051,290. Valveless Rotary Combustion Engine. Maurice Tips, Brussels, Belgium. Filed July 20, 1912. Serial No. 710,687. (Two-cycle revolving cylinder motor.) 3 claims.

1,051,305. Shock Absorber. William H. Bell, New York, N. Y., assignor to Oswald J. Karsch, New York, N. Y. Filed Apr. 10, 1912. Serial No. 689,812. (Shock absorber of the auxiliary spring type.) 6 claims.

1,051,307. Vehicle Tire. Herman L. Biener, New York, N. Y., assignor, by direct and mesne assignments, to Auto Sectional Leather Tire Company, New York, N. Y., a Corporation of New York. Filed Nov. 24. 1911. Serial No. 662,098. (Spring wheel with spiral springs between inner and outer rims.) 3 claims.

1,051,352. Dirigible Headlight for Vehicles. Wallace R. Petty., Price, Utah. Filed Apr. 5, 1912. Serial No. 688,800. (Headlights moving with steering gear.) 1 claim.

1,051,369. Charge-Mixing Device for Gas Engines. Forrest A. Heath, Jersey City, N. J., assignor, by mesne assignments, to Homo Company of America, Philadelphia, Pa., a Corporation of Delaware. Filed Sept. 20, 1909. Serial No. 518,509. (Mixer with revolving fan in gas passage.) 1 claim.

1,051,373. Inductor Generator for Ignition Purposes. John L. Milton, Chicago, Ill. Filed June 17, 1907. Serial No. 379,485. (Magneto with stationary winding and cross-shaped inductor.) 12 claims.

1,051,579. Automatic Fender and Brake for Automobiles. Albert D. Barth, Philadelphia, Pa. Filed July 27, 1911. Serial No. 640,896. (Fender operating automatically and connected with brake and clutch control.) 3 claims.

1,051,388. Cut-off Shade for Headlights. Maurice F. Castleman, Berryville, Va. Filed Mar. 7, 1912. Serial No. 682,179. (Adjustable shield for upper part of headlight.) 5 claims.

1,051,403. Auxiliary Tension Device for Shock Absorbers. Howard R. Harrison, Detroit, Mich. Filed July 5, 1912. Serial No. 707,660. (Compound coil springs between main springs of a car.) 4 claims.

1,051,425. Ignition System. Charles Thomas Mason, Sumter, S. C. Filed Apr. 22, 1912. Serial No. 692,474. (Ignition system with magnetic control of breaker.) 2 claims.

1,051,431. Resilient Wheel. William J. Mettler, De Kalb, Ill. Filed Apr. 8, 1912. Serial No. 689,248. (Disk wheel with spring tire.) 2 claims.

1,051,440. Carburetter. Alexander Ostler, Newark, N. J., assignor to Hydro-Carbon Machine Company, a Corporation of New Jersey. Filed Dec. 20, 1907. Serial No. 407,292. (Floatless, automatic carburetter.) 5 claims.

1,051,457. Vehicle Wheel. Bert Halaster Seevers, Akron, Ohio. Filed Aug. 2, 1912. Serial No. 712,987. (Hollow sectional tire with rubber tread and internal springs.) 1 claim.

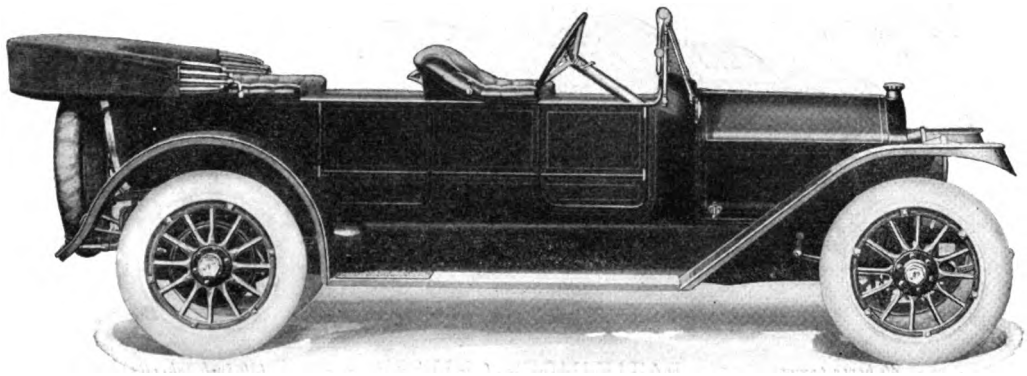
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Holds World's Stock Championship

National

Holds World's Record for Fastest 500 Miles in Competition

Once a National Dealer, Always a National Dealer



Electric started and lighted; not only left side drive, but *access* to both front doors

Five models, $2750 to $3400

Less "missionary work" and quicker profits—if you handle the *National*

Wherever motorists foregather and discuss motor cars—you will invariably hear the *National* mentioned, and always mentioned *favorably*.

The *National* has run a consistent, persistent race for leadership in quality since it built its first car 13 years ago, and remains today in the lead.

No car today has received more mouth-to-mouth advertising than the *National*.

This means much to you as a dealer. Your time is worth money and in selling a car the less time you devote to "missionary work"—to educating the prospect and telling him about the merits of the car you are offering him—the bigger will be your profits. This is just as true in selling automobiles as it is in the grocery, drug, hardware or shoe business.

The American people know about the *National*—they *appreciate* the merit of the *National*—they have *confidence* in the *National* car and the *National* Factory Organization that builds it.

No apologies to make—no competition to fear

If you are handling a competitive car—you know from actual observation that the "missionary work" has been done in advance for the *National* Dealer—that the *National* dealer has no apologies to make or competition to fear.

As a salesman you know that if the prospect "knows about" your car—if he is favorably impressed in *advance*—if he has confidence in your car and the factory organization behind it—before you even start you have the battle more than half won.

This favorable impression on the part of the public toward the *National* has enabled *National* dealers to "cash in" on it time and time again. And *National* dealers enjoy a year-round business.

Increased output gives you a big opportunity

Our business is to make the best car money, brains and skill can produce. The *National* today is as near motor car perfection as it is possible to obtain—it is powerful, absolutely dependable, first class in every way—easy to operate, convenient, comfortable, luxuriously furnished—it has a most efficient electric starting and lighting system—it is truly a $5000 car selling for $2750 to $3400, minus the $5000 price tag.

Your business is to *sell* motor cars *at a profit*. Some dealers overlook those three *important* words—"at a profit"—and it makes a big difference in the balance to their credit at the bank, at the close of the season.

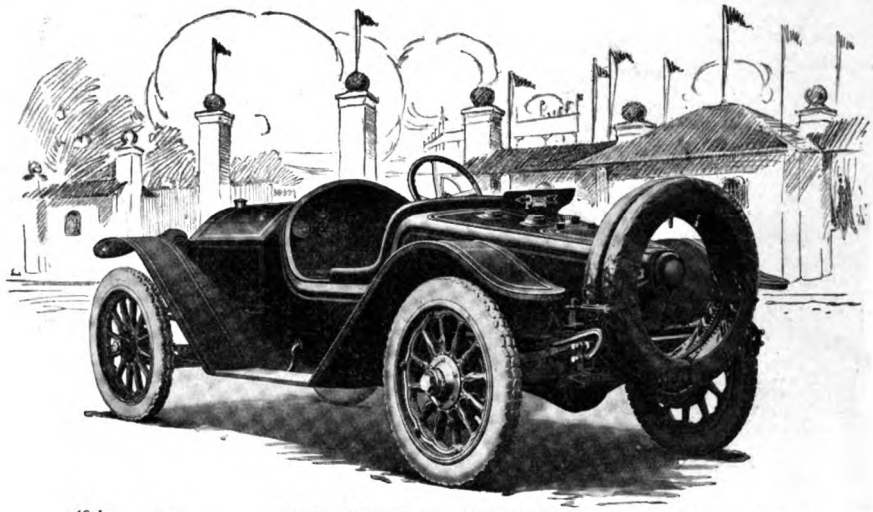
If we can't prove to you that *you* can *sell* the *National* *at a profit*, you won't care to join the great *National* Sales Organization and we won't urge you to do it.

So the burden of the proof is on us—wire or write us at once—come to Indianapolis if you can, go through our factory—let us submit the *proof*—then decide for yourself.

Now is the time—get in touch with us *immediately*.

National Motor Vehicle Co., Dept. 90, Indianapolis, Ind.

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40 horse power PATHFINDER CRUISER *120 inch wheelbase*

Harmony of design marks the PATHFINDER a car of quality

¶ Real money has been spent to make the Pathfinder a quality car. Only materials that are standard with manufacturers who have a reputation for producing the best are used. Yet the Pathfinder is not classed as an "assembled car" because every part is made especially for us, according to our own design patents, and has no duplicate in any other car.

¶ Harmonized construction, or the scientific blending of

—quality materials *—quality workmanship*
—quality design *—quality finish and appearance*

such as you find in the Pathfinder car means years of enjoyment and pride of ownership as well as economy in the long run. Some cars combine one or two of these factors but the Pathfinder has them all.

¶ Do not be deceived into buying a motor car on the strength of some accessory or novelty that has nothing to do with the operation of the car itself.

¶ To be sure you want a reliable electric self-starter—the Pathfinder starter is 100 percent. efficient—and you want electric lights, an electric horn, demountable rims—and you want the instrument board within easy reach of your hand. But these necessities are not *fundamental.*

¶ To thoroughly familiarize yourself with the advantages of Pathfinder construction get a copy of our "101 Reasons." This, and other Pathfinder literature, will tell you why Pathfinder cars make friends in their old age—explains why Pathfinder cars will run quietly in their fifth year of active service due to renewable bearings and perfect weight distribution. Get a copy of the *"101 Reasons"* today without fail. Your name on the margin of this page will do.



THE MOTOR CAR MFG. CO.

1138 Division Street Indianapolis, U. S. A.

Write your name on the margin and get **1914** Pathfinder literature

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A Continued Story
Chapter 3

No. 4
in our next

Well, what the—
Let's think!

I've cranked that confounded, fool car for the last half hour and she won't start.

What have I forgotten ?

To prime the engine ?
Tickle the carbureter ?
Open petcocks ?
Shut off the air ?
Spark switch turned on ?
Gas turned on ?
Gasoline all gone ?

Ges! I've got to get her going some way. I'll try her some more—Lord! how my back aches.

GLBA
Storage Battery

Write us for full information

Willard Storage Battery Company, Cleveland, Ohio

New York Branch—136 West 52nd Street
San Francisco Branch—243 Monadnock Bldg.
Chicago Branch—2241 Michigan Avenue
Detroit Branch—1191 Woodward Avenue
Indianapolis Branch—438 and 439 Indiana Pythian Bldg.

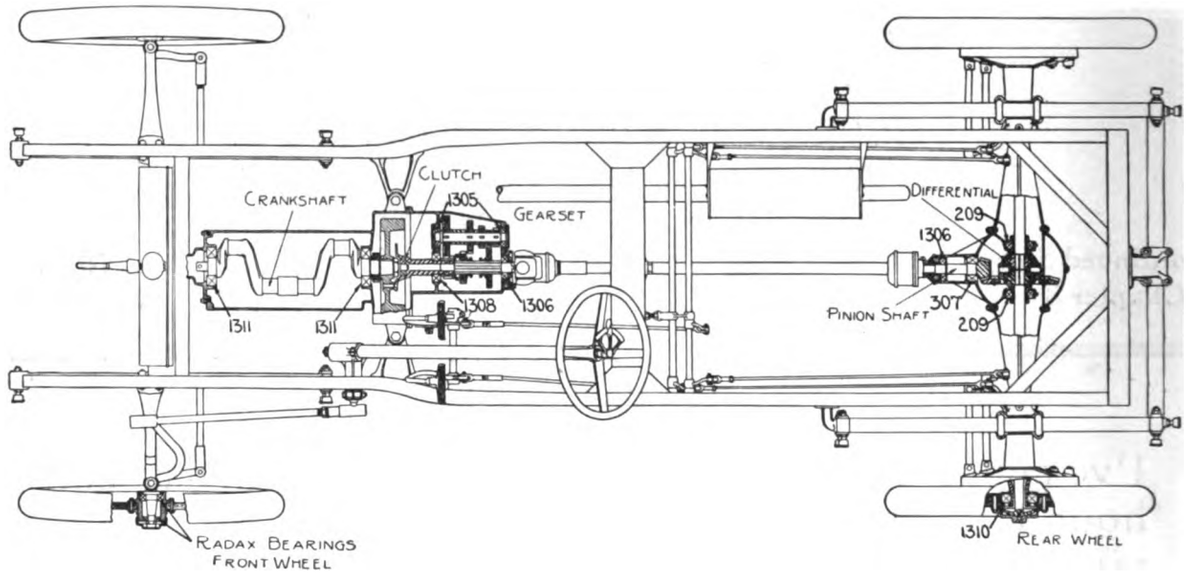
Depots in All Principal Cities in the United States, Canada and Mexico

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American Made For American Trade

New Departure

Ball Bearings Throughout, and Why



By the use of New Departure ball bearings throughout the entire chassis, the manufacturer of this car has reduced power losses, repairing and operating costs to a minimum.

New Departure ball bearings eliminate friction. Friction is expensive, wears away the parts, hastens depreciation, and makes frequent repair necessary.

By eliminating friction New Departure ball bearings waste so little of the motor energy that maximum driving power is transmitted to the rear wheels. By eliminating friction there is practically no wearing away of the parts. The life of the entire car is longer and repairs are fewer.

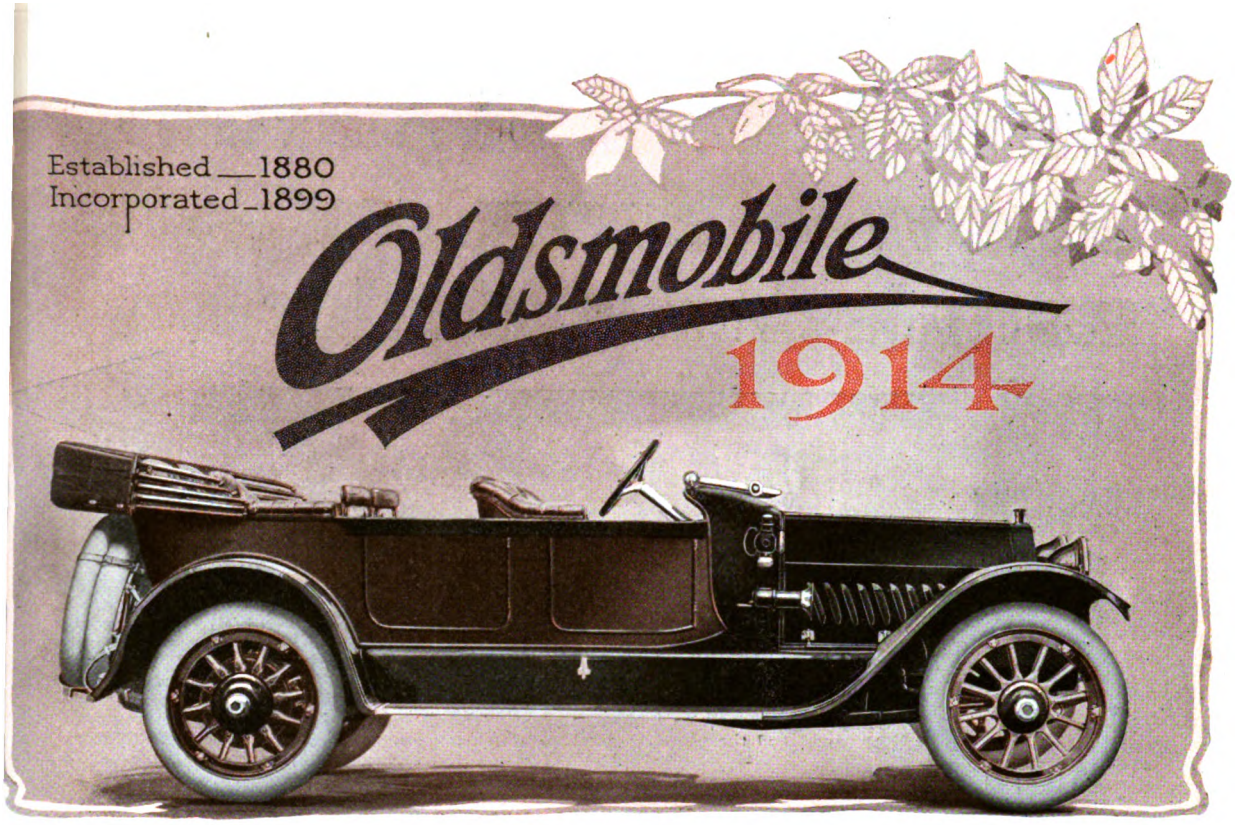
All of these advantages are secured without sacrificing bearing efficiency. New Departure ball bearings will carry the load under all conditions of service equally as well as any bearing made.

Have you seen our interesting brochure on "Friction Elimination"? If not, drop us a card today and it will be forwarded to you by return mail.

The New Departure Mfg. Co., Bristol, Conn.

Western Branch: 1016-17 Ford Building, Detroit, Mich.

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This Is the 1914 Oldsmobile That So Many Dealers Have Been Clamoring For

The Greatest Six-Cylinder Car Ever Produced

OUR entire sales organization, engineering department and factory managers not only endorse the statement that this is the greatest six-cylinder car ever produced, but insist upon advertising it as such—there is no other expression which so adequately and truthfully describes the new 1914 Oldsmobile Model 54.

We have never before in our sixteen years of automobile manufacturing made so strong a statement. Our policy has ever been, and will continue to be, a truthful adherence to facts, and when we commit ourselves we believe we can prove by demonstration or comparison that we have not underestimated the position occupied by Model 54 among sixes.

From the purchaser's viewpoint this 1914 Oldsmobile contains every feature of refinement, stability, luxury and power that can be found in cars of greater price.

From the dealer's angle it has back of all these features a reputation as solid and as old as the industry itself.

It is fair to state that there is not another six-cylinder car in America any better or wider known than the Oldsmobile.

It is not necessary to introduce the Oldsmobile. Olds Motor Works was founded in 1880, and after 34 years of successful manufacturing we celebrate anniversaries not introductions.

You, who are familiar with motor car values, compare the 1914 Oldsmobile with higher priced cars and see for yourself if there is any reason why we should not be classed with the highest priced. Compare with cars of cheaper make and try to find an argument for not adding just a few dollars more in order to secure an Oldsmobile.

Dealers interested in six-cylinder cars have displayed a keener interest in the 1914 Oldsmobile than in any other model ever produced by the Olds Motor Works, and have unanimously pronounced it a supreme achievement among sixes.

The complete equipment on the Model 54 is the finest that money can buy.

Four or Five-Passenger Phaeton touring body type $2975
Seven-Passenger Touring Body, $175 extra
Limousine 4300

Wire Wheels—Oldsmobile Trunks and extra tires at additional cost

To reliable dealers we have an interesting and profitable message

1914 Deliveries Begin August First

OLDS MOTOR WORKS, Lansing, Michigan

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Three letters of startling import to every car manufacturer, dealer and user

1 —from G. A. Hendricks to W. H. Tripp

Grand Rapids, Mich., August 1, 1913.

Mr. W. H. TRIPP,
Western Advertising Manager, The Motor World,
1001 Ford Building, Detroit, Mich.

Dear Billy:—

Through a mutual friend, I just learned of your connection with The Motor World.

I am enclosing description of a device of mine—read it over. It seems to be so good that no one will believe it, therefore I want you to come and see it personally the next time you are in Grand Rapids.

My first experience driving an automobile was with a Hupmobile purchased in 1909. I drove it three or four thousand miles and about every six or seven hundred miles, it was necessary to have the carbon removed and the valves ground, which started me to thinking there must be some way of eliminating this very serious and expensive difficulty and the device shown in the circular is the result.

The original device and experiments were all on this Hupp machine, and from the spring of 1910 to the present time, this machine has been driven approximately an additional 39,000 miles with no attention whatever to the valves and with maximum power at all times.

In February, 1912, I purchased a Rambler Cross Country and immediately attached an Ad-a-Man-Tor to it. This car has now run about 15,000 miles with no attention to the valves and it appears the car will run indefinitely without grinding the valves.

If you know what a statement of this kind means, you doubt can find some excuse for the fellow who doubts the statement— ssibly you will doubt it yourself and that's the reason I am suggesting hat you see it personally.

Yours very truly,
(Signed) G. A. HENDRICKS.

2 Mr. Tripp's Reply

Detroit, Mich.,
August 4, 1913.

To HENDRICKS,
Grand Rapids, Mich.

Dear Mr. Hendricks:—

Will be in Grand Rapids on Tuesday and glad to have you tell me all about your invention. Looking forward to seeing you, I am,

Very truly yours,
(Signed) W. H. TRIPP, Western Advertising Manager.

3 Another letter from Mr. Tripp

Detroit, Mich., August 14th, 1913.

Dear Mr. Hendricks:—

I am sending our Mr. Maxton R. Davies down to see and talk with you in reference to the Ad-a-man-tor. Mr. Davies drives a car and is thoroughly familiar with automobile engines and will be glad to look over your device in detail and get the facts about it for our paper.

With kind regards, Yours very truly,
(Signed) W. H. TRIPP, Western Advertising Manager.

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39,000 miles *without touching* or *grinding valves* and the device that made this record possible

A Sworn Statement

State of Michigan, County of Kent, } s. s.

This is to certify that the Hupmobile referred to in attached letters has traveled approximately 39,000 miles without attention to valves other than the Ad-a-man-tor cleaning; also that the Rambler Cross Country equipped with Ad-a-man-tor engine cleaner has traveled approximately 15,000 miles without any attention whatever to valves, and that both machines are still running perfectly.

(Signed) G. A. HENDRICKS.

I am employed as mechanician for G. A. Hendricks, and know the above statement to be true and correct. (Signed) SCOTT HUSO.

I am the sales agent for the Thos. B. Jefferys Co., and sold the Cross Country Rambler to G. A. Hendricks, and know above statement to be true and correct.

(Signed) B. F. KENYON.

Personally appeared before me, G. A. Hendricks, Scott Huso, and B. F. Kenyon, known to me, and who signed the above statements and who severally made oath that the same were true and correct.

Grand Rapids, Kent County, Michigan, August 19th, 1913..

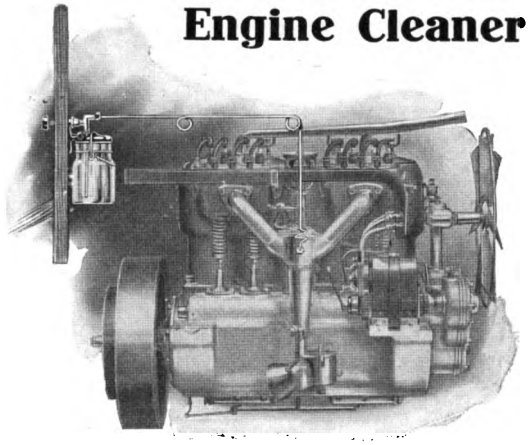
(Signed) PALMER A. JONES, Notary Public, Kent County, Michigan.

[Official Seal. My commission expires Dec. 20, 1915.

The Ad-a-man-tor

Engine Cleaner

A simple practical, usable engine cleaner that gives ar ring results. Keeps valves and cylinders free from carbon. Does away with any need for grinding valves. The affidavit above shows how it works and why it should be on every car.



A Word to Manufacturers



This is all that shows on dash

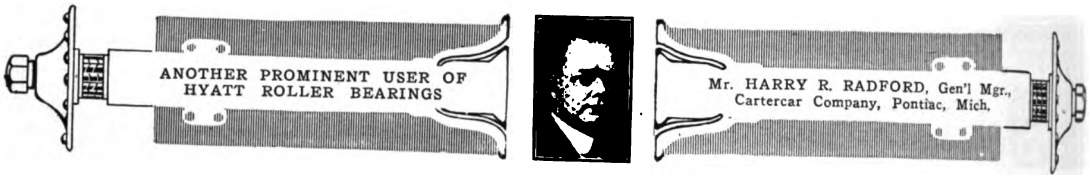
An Ad-a-man-tor on every car you make will save you thousands of dollars in service expense; will add to the efficiency of every engine; will add reputation and value to your car. Most engine troubles are due to carbon. The Ad-a-man-tor CLEANS OUT THE CARBON and saves the trouble. We sell it on ten days or three months trial—satisfaction or your money back.

Write AT ONCE for sample and further details.

Think what this material means for priming alone! What a help to self-starters in winter!

G. A. HENDRICKS, Grand Rapids, Mich.

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HYATT QUIET BEARINGS



THE enormous strains and stresses set up in the reciprocating parts of a motor car traveling at even a moderate speed over ordinary roads impose a severe duty upon the bearings of the transmission and axles.

In a solid roller or ball bearing this duty is in the nature of a "dead shock" or load that causes undue wear and noise and has to be absorbed by the surrounding mechanism.

The Flexible feature of the Hyatt Roller Bearing cushions the shock, absorbs vibration and relieves the shafts and gears of excessive strain.

The durability of the Hyatt Roller Bearings is further increased by rigidly testing the high grade alloy steels used in them. These tests are so thorough and comprehensive that the possibility of any weakness or defect in the bearing is reduced to a minimum.

HYATT ROLLER BEARING CO.
DETROIT, MICHIGAN
CHICAGO ILL. NEWARK N.J.

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Sell Spark Plugs That Give Real Service

BOSCH PLUGS, in addition to being perfectly constructed, in addition to being made from the finest of materials obtainable, have 6 special and exclusive features which make them the superior spark plug—Just the plug your customers want.



$1.00 Each
is the selling price. Shipped from nearby distributors, thus reducing shipping costs.

1 Crescent Electrodes minimize electrical resistance affording the maximum spark, therefore maximum power at all speeds and easy starting always assured.

2 Undue wear of electrodes prevented, consequently long life is certain.

3 Insulation, Steatite, unaffected by intense heat, carbon or oil, and unbreakable by vibration or accident.

4 Design permits massive and absolutely gas-tight construction—no power loss at any pressure.

5 BOSCH PLUGS are "excessively" durable; they last as long and serve as well as you expect a "Bosch" product will.

6 BOSCH PLUGS are as good as Bosch Magnetos.

Write for "Locating the Spark Plug"
It's educational and will be sent you free

BOSCH MAGNETO CO., 224 West 46th St., New York
CHICAGO :: DETROIT :: SAN FRANCISCO :: TORONTO

Address Bosch Distributors at: Portland, Me.; Boston, Buffalo, Rochester, Philadelphia, Pittsburgh, Baltimore, Richmond, Va.; Memphis, Toledo, Milwaukee, Minneapolis, Des Moines, Omaha, Kansas City, Mo.; St. Louis, Denver, Seattle, Portland, Ore.; Los Angeles. Other stations in important centers of United States and Canada.

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Territorial Ag

INVA

O

Clearest



FACTORIES:

NEW YORK..... 92 Pearl St.
PHILADELPHIA..... 113 Arch St.

BRANCHES:

BOSTON..... 284 Columbus Ave.
WASHINGTON, 3627 New Hampshire Ave., N. W.
PHILADELPHIA, 113 Arch St. and 719 N. Broad St.

INVADER O

Lessees of Cha

Main Office: 81 Broad

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nts Wanted



DER LS

Cleanest

COMPANY
Kellom & Co.
treet, New York

TERRITORIAL AGENTS

Boyer-Campbell Co.....Detroit, Mich.
Beck & Corbitt Iron Co.....St. Louis, Mo.
Motor Car Supply Co.....Chicago, Ill.
Lee Hardware Co.....Salina, Kan.
American Lubricating & Supply Co., Kansas City, Mo.
James Bailey Company.....Portland, Me.



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The Foreign Trend

The builders of motor cars abroad are constantly introducing new ideas, new body designs, new equipment and new methods of construction.

There are wire wheels and worm drive now. And other things are promised.

But some things there, as here, are standard.

One is The Jones Speedometer.

Seven years ago The Jones became Europe's most popular speedometer.

It won the Royal Automobile Club's gold medal for all around superiority in a test that covered 2,000 miles and lasted 30 days.

It was placed on the cars of the King of England, the Emperor of Germany, the Czar of Russia, the King of Italy, the King of Spain, and the Kings of Siam, Norway, Sweden, Denmark and Belgium. The President of Switzerland and the President of France, and hundreds of other notables used it.

It is used by these rulers and thousands of others on the best cars today.

No other speedometer ever gained such prestige or was ever so widely sold abroad. No other sells there today like the Jones. The love of new things—the foreign trend—doesn't dislodge the Jones.

It is regarded as the Standard Instrument because of its accuracy. And nobody ever thinks of displacing it. The makers of thousands of American cars are factory-equipping their product this year with the New Jones Speedometer.

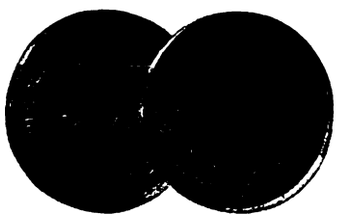
They expect their cars to be used the year 'round and they know the Jones isn't affected by temperature. The Jones is the Universal Speedometer. Makers and owners are finding this out. It is accurate, *always*. The simplest in principle. And the longest-lived.

It's the product of Jos. W. Jones, the inventor of the speedometer as used on motor cars. Nothing else will ever serve like the Jones Speedometer.

Let us send you the man who knows it in detail and can give you the fullest information in regard to placing it on your car.

THE JONES SPEEDOMETER

Broadway at 76th Street NEW YORK CITY



This is the Gold Medal presented to The Jones Speedometer by the Royal Automobile Club of Great Britain and Ireland. Eleven different instruments competed in the test—foreign and American makes. The Jones made the only perfect score on seven points of superiority. And the Jones is the only speedometer that has ever won this medal.

BRANCHES

New York, Broadway at 76th St.
Boston, 169 Massachusetts Ave.
Philadelphia, 1427 Vine St.
Chicago, 1430 Michigan Ave.
Baltimore, 217 W. Saratoga St.
Detroit, 872 Woodward Ave.
Buffalo, 20 Goodrich St.
Pittsburgh, 5904 Penn Ave.
Cleveland, 3451 Euclid Ave.
Charlotte, 209 Church St.
Memphis, Madison Ave. and 4th St.
Newark, N. J., 282 Halsey St.
Minneapolis, 900 Hennepin Ave.
Omaha, 1806 Harney St.
San Francisco, 1426 Van Ness Ave.
Los Angeles, 403 W. Pico St.
Portland, Ore., 71 Seventh St.
Seattle, 1710 Broadway
Indianapolis, 1201 State Life Bldg.
Atlanta, 35 North Pryor St.
New Orleans, Baronne and Perdido Sts.
Birmingham, 18 South 20th St.
Denver, 1600 Broadway
Albany, N. Y., 133 Hudson Ave.

FOREIGN AGENCIES

J. Millen & Son, Ltd., Montreal, Toronto, Winnipeg, Vancouver; Markt & Co. (London), Ltd., London; Markt & Co., Hamburg, Milan, Vienna, Barcelona; A. A. Kampfraath (Brussels), Ltd., Brussels, Amsterdam; Severin & Co., St. Petersburg; G. Bruggemann, Moscow; Y Wm. D. Rose, Paris; D. Easy & Co., Sydney, Australia; The Tarrant Motor Co., Melbourne, Australia; C. E. Helvie, Manila, P. I.; Adams, Ltd., Christchurch, N. Z.; Markt & Schaefer Co., Rio de Janeiro, Brazil; Buenos Aires, Argentine; Mexico City, Mex.; Habana, Cuba; San Juan, Porto Rico.

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Chalmers–1914

The New "Six"



$2175

Fully Equipped f. o. b. Detroit

The Master Motor of Them All

What other makers are still striving for we give you in the New Chalmers "Six."

To the best features of the costliest cars we have added these crowning triumphs:

Silence at all speeds; silence that lasts.

Many cars that are quiet at ten miles an hour, kick up a lot of noise at thirty. Watch the speedometer of the New Chalmers "Six";—30—40—50 miles an hour and not a murmur from our big oval cams or enclosed valves.

The silence of the Chalmers "Six" means more than the mere luxury of quiet. It tells you that your motor is working with the perfection of a watch—without the slightest wear. And this silence continues for years.

Sustained power; even after years of use.

This motor, like the trained athlete, grows better by action. Its Tungsten steel valves are not affected by the cylinder heat. So there's no warping—no leaking—no power wasted. Think of the years of extra service this master motor will give you.

No vibration; comfort and long life.

The smoothness of the "Six" saves wear on the car as well as on the passengers. The interval between the explosions of any "four" makes a gap in the power stream. It produces a vibration that hammers constantly at the life of the car. There's no escape from it. The explosions of the "Six" give an unbroken stream of power. This gives smoothness and economy that no "four" can equal. It adds years to the life of the car.

Extreme flexibility, without intricate gearing.

You'll find you can do nearly everything on "high." It does away with gear shifting almost entirely. With this "Six" any supplementary gear mechanism would be useless. The motor itself gives a suppleness of power unknown even in costlier cars.

A Non-Stallable Motor.

This motor will never go dead in the crowded city traffic. The electric starter won't let it.

Even if the driver should cut off the gas accidentally, the electric starter, always on duty, keeps the motor running—won't let it stop.

This is the greatest feature of safety and convenience put on a car in the last five years.

These features mean far more than the luxury they bring. They mean no wear—no waste of power—no depreciation. A car that lacks them may cost you less to buy—but it will cost you more to keep.

When once you know the years of extra service these features add, you'll wonder how we give them at the price, $2175.

Go ride in this car—at our dealer's. Let it tell its own story in deeds. It can neither over-rate its virtues nor hide its defects. It must tell the truth—nothing else.

Let us send you literature explaining why the New Chalmers "Six" is the master motor of them all. Write today.

Chalmers Motor Company, Detroit

Salient Features of the New Chalmers "Six"

Six-cylinder motor, T-head type 4"x5½"—40-65 h.p. All moving parts enclosed.

Bosch Magneto.

Electric starter—Entz System, built in Chalmers shops.

Non-stallable motor.

Full electric lights—Our powerful headlights also contain auxiliary lamps of moderate power for city driving.

132-inch wheel base.

Molded oval fenders.

Gasoline tank and tire carrier on rear—clean running boards.

Left drive and center control—enter from either side.

36x4½-inch tires and Continental demountable rims.

Four forward speed transmission.

Underslung rear springs; main leaf of vanadium steel.

Tapered bonnet and stream line, bell backed body.

Chalmers patented doors—unusually wide.

Full equipment — including Chalmers silk mohair top, quick acting storm curtains, Warner speedometer, one extra demountable rim, electric horn, pump, tools, etc.

Models and Prices

Roadster	$2175
Four Passenger	$2175
Five Passenger	$2175
Six Passenger	$2275
Coupe	$2850
Limousine	$3600

(Fully equipped, f. o. b. Detroit)

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One of the first things you will be asked about wire wheels is "How do they compare with wooden wheels?"

The strength of wire wheels to resist side thrust is fifteen times as great as the side thrust strength of wooden wheels.

ADD these qualities together and you have a sum of essential benefits far in advance of wooden wheel construction but secondary to the wonderful tire economy of wire wheels.

In all our advertising we have been comparing wire wheels and wooden wheels, bringing out the benefits and advantages of wire wheels which years of use have demonstrated to be unquestionable. Our statements as to wire wheel strength, riding qualities and tire economy are founded upon the results of tests. At first our statements were founded upon tests conducted by engineers, tests capable of exact

McCUE

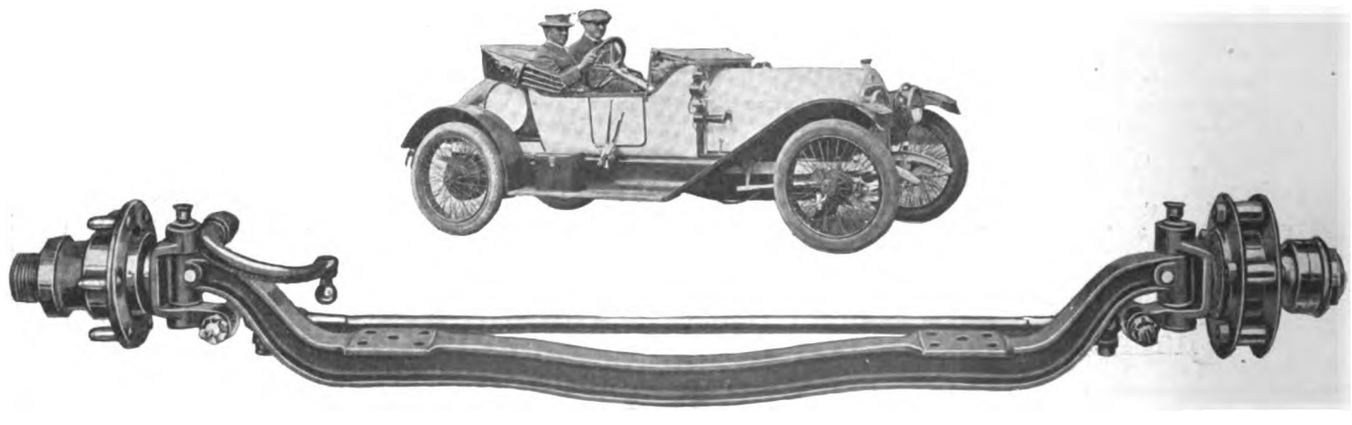
results. The results were checked by close observation of wire wheel performance in every day usage—track racing, road racing, hill climbing, endurance runs, commercial work on taxi cabs, touring, city and town car usage, in fact every kind of test of practical motor car use.

The sum and substance of wire wheel superiority is stated in three words—better car service.

The "better car service" that wire wheels give is found in three essentials:

1. Greater strength and lighter weight—a factor engineers appreciate.

The McCue Company



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While a wire wheel weighs the same as a demountable rim its carrying strength is five times as great.

The superb riding qualities of wire wheels are due to their light rims and laced spoke construction.

2. Better riding qualities—a feature that gradually makes itself indispensable to owners.
3. Tire economy—at least 50% more than with wooden wheels—an advantage which dominates everything else in giving car owners the service they have the right to expect in the cars they buy.

Tire economy this is the first and greatest element in "better car service." Tire economy is the first and greatest reason why manufacturers should equip their cars with wire wheels. Tire economy is the first and greatest benefit car owners are seeking.

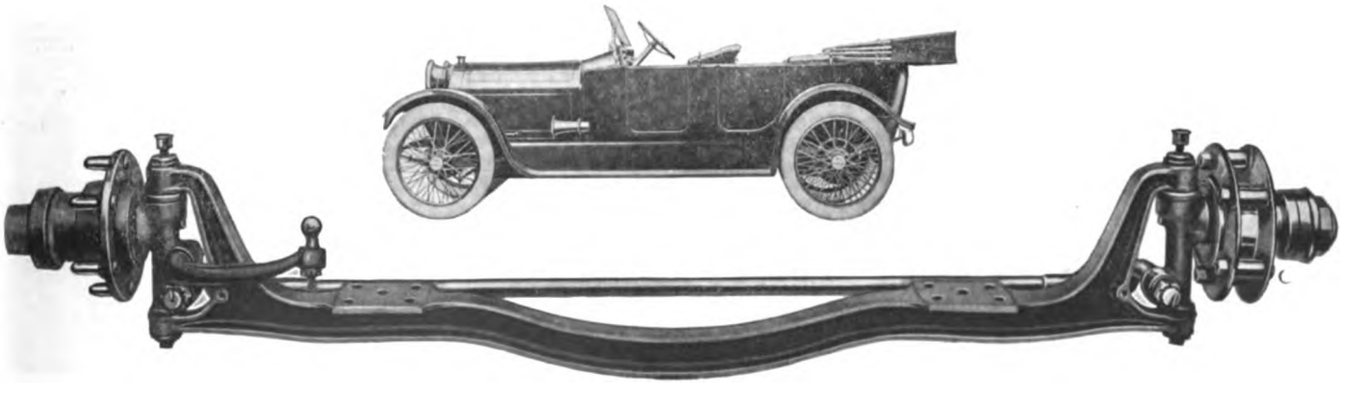
WIRE WHEELS & AXLES

Every dealer should demand wire wheels on the cars they sell on the basis of giving their customer "better car service."

McCue Wire Wheels use the Standard (S) Spokes made for us by the Standard Company of Torrington, Conn.

We are the only concern making wire wheels in America equipped to produce wire wheels in quantities to meet the demand. Our outfit is 1000 wire wheels per day.

Buffalo - New York



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Hartford Cone Clutches

IN each Hartford Cone Clutch Assembly then there is a universal joint which provides the necessary flexibility for the main shaft.

The Hartford method of building universal joints is, in itself, worthy of close scrutiny because poor construction of a perfectly designed universal or good construction of a poorly designed universal will cause never-ending clutch trouble.



Standard Hartford Cone Clutch Unit Complete With Universals. This is the Type Clutch We Have Specialized in for Years.

The bearing portions of Hartford Universals are machined to .00025 of one inch. A quarter-thousandth of an inch is the limit to which the male and female members of the Hartford Universals must come so that the greatest possible amount of play between the two members is .0005 of an inch.

With this slight amount of play wear is almost unknown because there is no chance for its development, yet all the flexibility is there. Such a close joint means absolute silence in Hartford Universal Joints.

Another thing—all of which goes to show the consistency of Hartford construction—the cone hubs are faced and recessed, the leather face is turned and the soft steel cone faced all in one operation so that there will not be the slightest variation and so that all will be absolutely concentric.



Standard Universal Joint Assembly With Leather Dust and Grease Proof Covering.

In order to do away with the slightest irregularity due to vice-like pressure, during the turning operation the part is held in the machine by the grip of magnetic chucks.

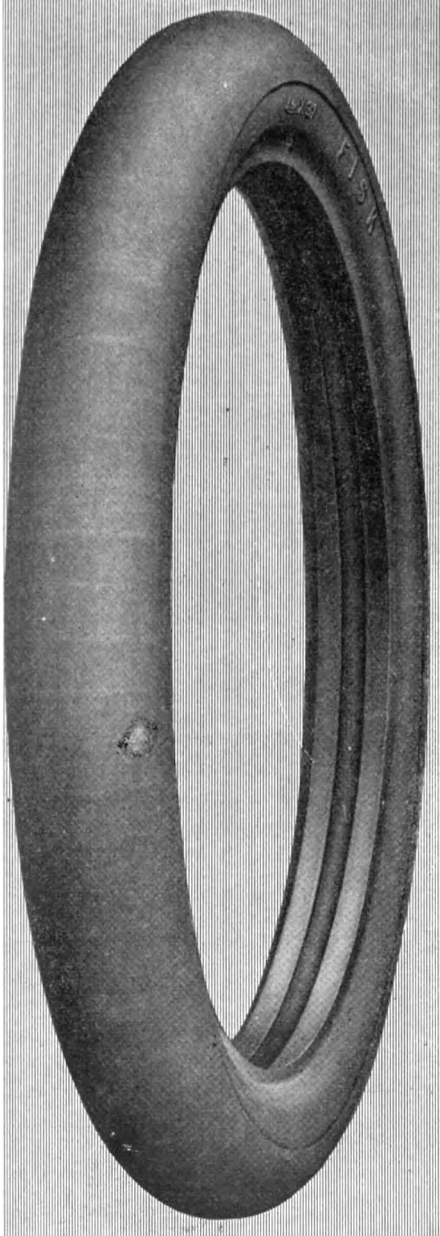
The accuracy of the cone friction surface, due to absolute concentricity with its shaft bearing, calls for the close quarter-thousandth limit of the universal joint, the flexible connection between the clutch proper and the drive shaft which it actuates.

Hartford Auto Parts Company
HARTFORD, CONN.

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HEAVY CAR TYPE FISK TIRES

Straight Side Tire



No Transaction is Complete Until Our Customer is Satisfied

WE accept our full responsibility with every transaction. If you sell our tires, we must earn your confidence and good will. It is not enough that we supply mileage; you are entitled to our personal interest in your tire business and all that pertains to it. Our one aim is to sustain the reputation we have established as the ***Squarest Dealing Company, makers of the Honestly-Built, Service-Giving Tire.***

We are the largest exclusively Pneumatic Tire builders in the world. We are probably the most rapidly growing company in the industry. Our 1912 business was double that of the year previous. To date for 1913 we have increased our 1912 sales by 100 per cent and must continue to add to our building facilities in order to meet the demand for Fisk Tires. Our growth is due to the QUALITY of Heavy Car Type Fisk Tires and the CONFIDENCE which we inspire.

The Fisk Branches

are the most complete tire service stations in the United States.

Each is a miniature factory prepared to serve consumers direct and to co-operate with dealers everywhere that they may assure to their customers the advantage of real FISK SERVICE.

Each department of these Branches is in charge of an expert. The knowledge that these men possess is freely given at all times to tire users and has repeatedly been successful in solving tire problems.

Write Department 23 for Fisk Dealer Proposition

The Fisk Rubber Company

Factory and Home Office, Chicopee Falls, Mass.

DISTRIBUTORS

The Fisk Rubber Company of New York

BRANCHES IN 40 CITIES

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Lancia

AMERICA'S FAVORITE FOREIGN CAR SOLD AT AMERICAN PRICES

Lancia cars, made in Europe, offer the American buyer every European point of superiority in material, engineering features, workmanship, design and finish—and it is conceded that car building methods which obtain on "the other side" are years in advance of American methods.

And American Dealers can sell Lancia cars at American prices.

DEALERS WANTED

You, Mr. Dealer, know that limited quantity production insures the ***personal attention*** of every man engaged in the building. Lancia production is typically European because it is limited. Here are no American cut and dried operations that produce quantity at the heavy expense of quality.

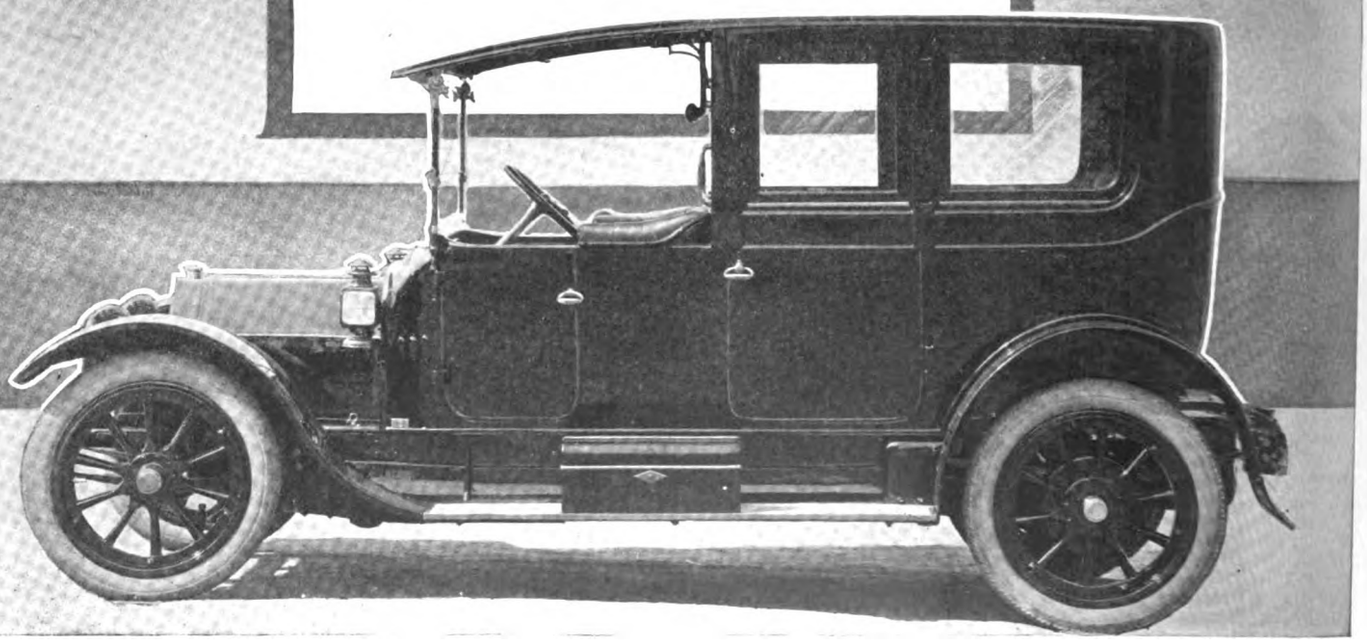
Lancia dealers use these arguments as the basis for selling arguments.

Car wise buyers who want European automobiles are quick to grasp and act upon them.

There is some choice territory awaiting dealers who are looking for that ***different and better car.*** Are you such a dealer?

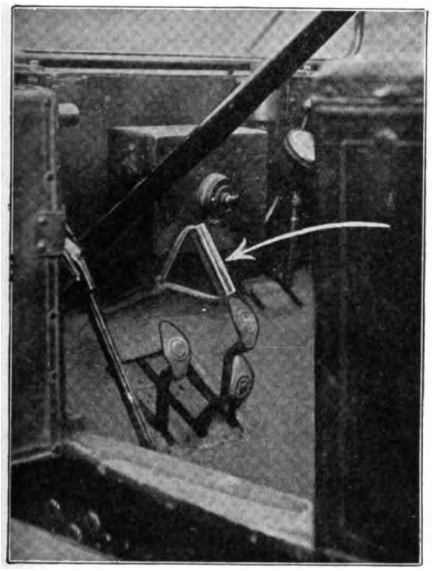
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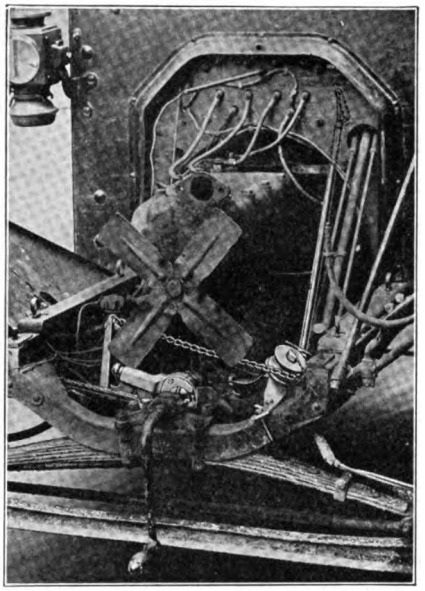
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Corner Broadway and 57th Street, N. Y.

Branch offices in New York, Chicago, Philadelphia, Boston, St. Louis, Detroit, Cincinnati, San Francisco, Los Angeles, Cleveland, Baltimore, Seattle, Atlanta, Akron, O., Buffalo.

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Over 2,000,000 Prove it

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One that does not chafe the tires.

What is the cause of chafing?
Loose fitting protectors, due usually to stretching.

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No—leather, and even fabric, is bound to stretch.

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Yes—by pulling the protectors tight by means of stiff springs which take up the stretch automatically.

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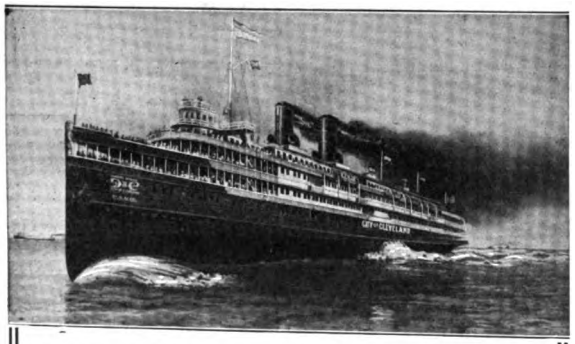
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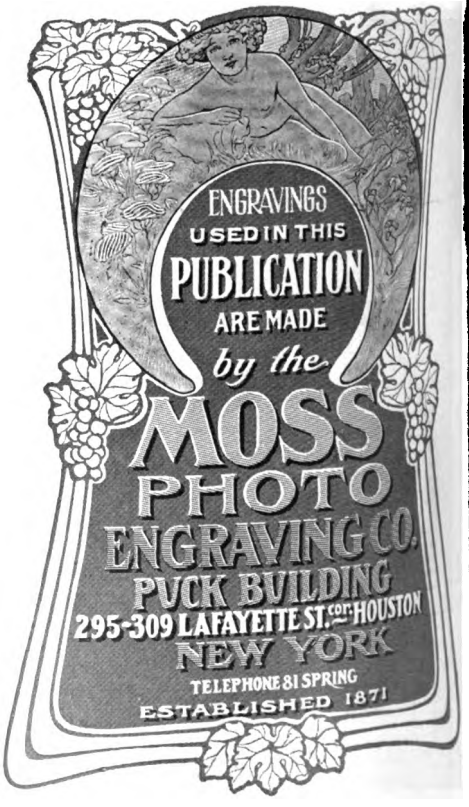
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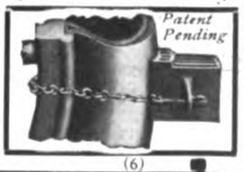
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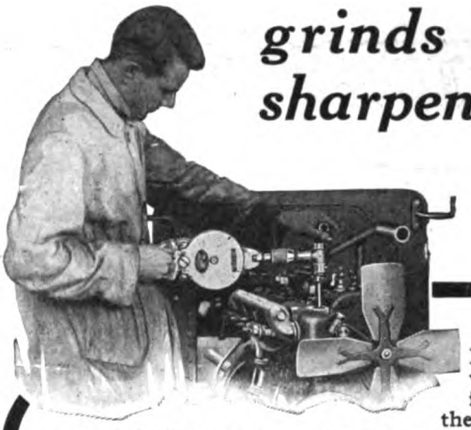
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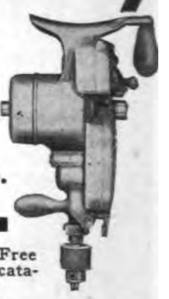
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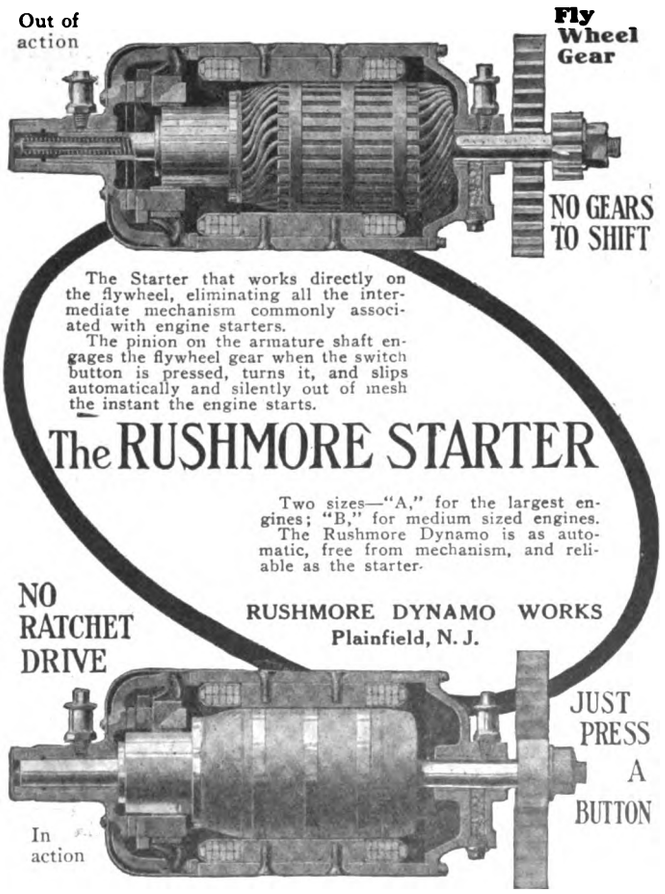
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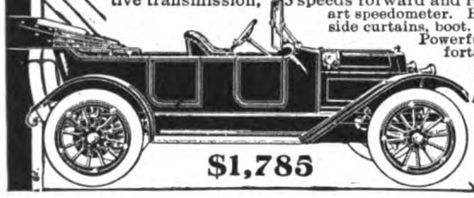
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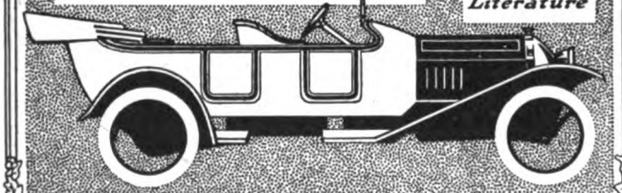
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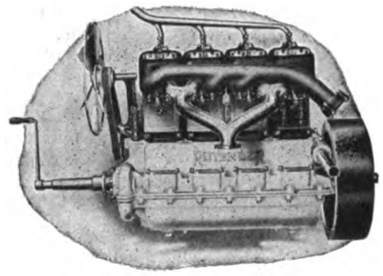
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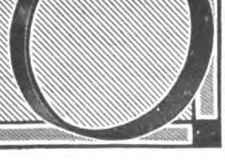
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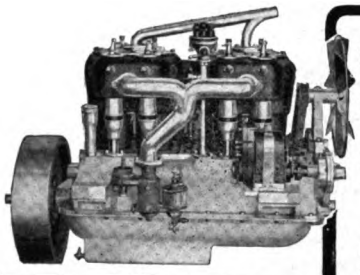
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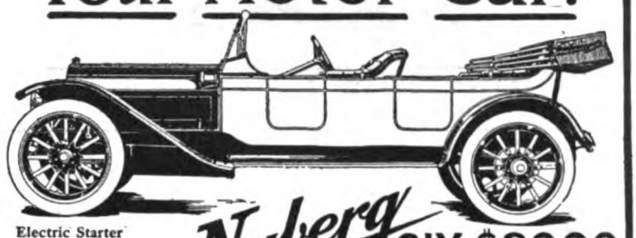
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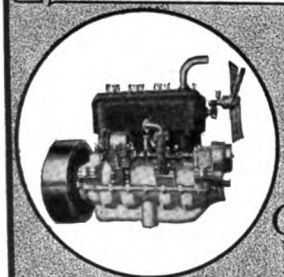


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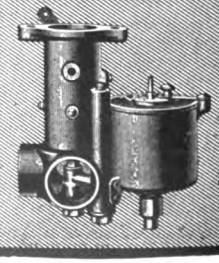
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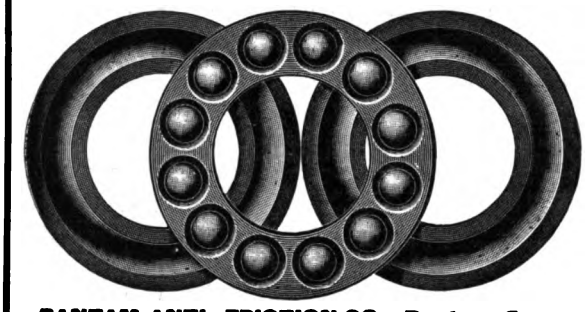
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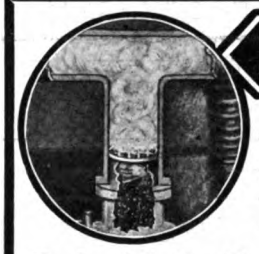
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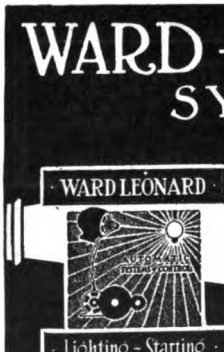
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Water-proof case mortises into pillar, ⅞ in. x 1⅝ in. x 1¼ in. deep.
Clearance in opening, 11-16 inches.

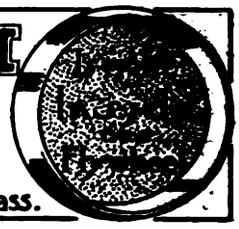

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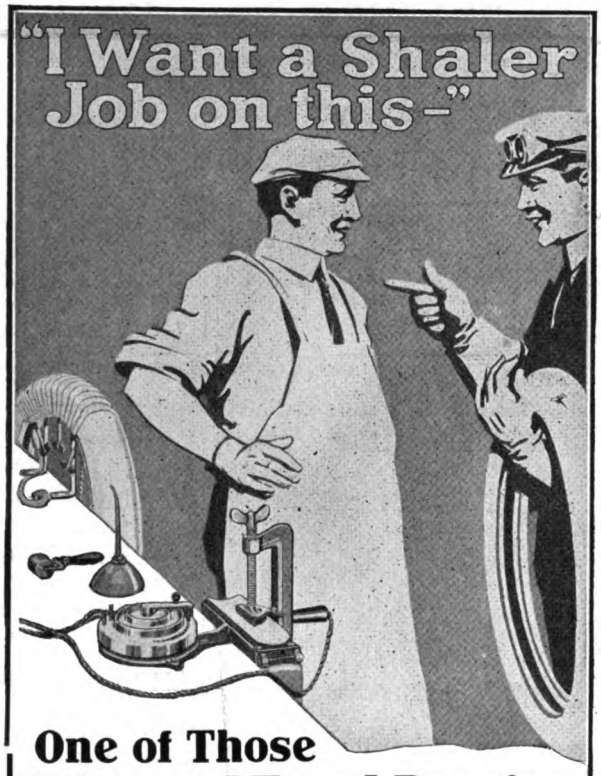
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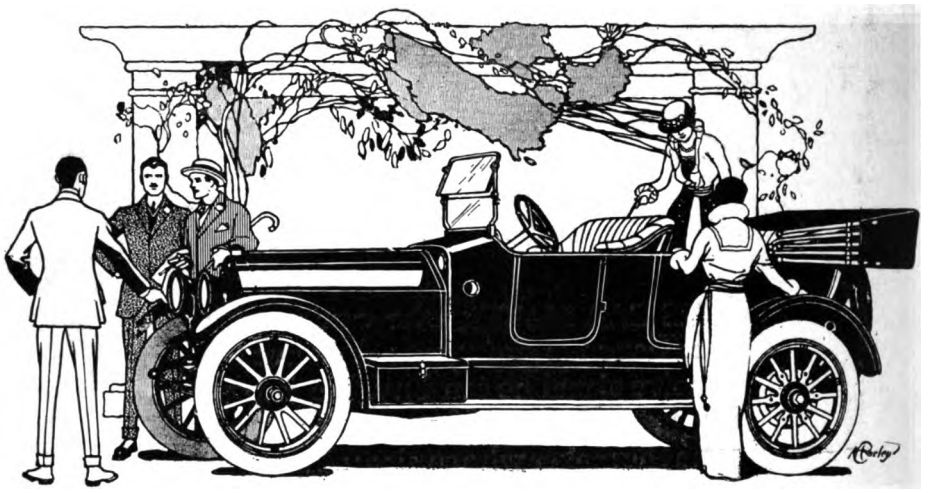
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"The Public Safety Signal"



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$2150 Marion $2150

Six-Cylinder, 50 h. p. Motor
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Four Double-Acting Brakes
124-Inch Wheelbase
35 x 4 1-2-Inch Tires
Westinghouse Electric Starter

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IF you could gather together a representative crowd of Marion owners from city and country you would find them ***solid, level-headed business and family men who invest without making mistakes.***

Their car must be a car of stamina, well-balanced power, convenience, comfort and the kind of good looks that will not suffer by comparison with models of future years.

All this they looked for and found in the Marion.

It is for these reasons that the Marion is often called "the substantial American Family Car.

The 1914 Marion dealer's contract is different from any you ever read. Wire us today for particulars.

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The Marion Motor Car Company

918 Oliver Avenue, Indianapolis, Indiana

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MOTOR WORLD

A Trade Paper Giving the World's Motor News

Vol. XXXVI
No. 11

New York, September 4, 1913

Ten cents a copy
Two dollars a year

This Is Another Gray & Davis Year

It begins with the largest order for starters ever placed—50,000 Gray & Davis Systems purchased by one of America's leading automobile manufacturers.

THE insistent demand from motorists for the Gray & Davis Starting-Lighting System, has just led to the biggest order of its kind ever placed. One manufacturer alone, to insure the reliability of his starter, has ordered 50,000 of our systems for use on his 1914 cars.

In addition, 31 other automobile manufacturers use the Gray & Davis Starter, Dynamo, or both in combination.

Marked reliability and efficiency have given the Gray & Davis Starting-Lighting System the leadership in its field. And our reputation has reached beyond the United States. Our business has become international, embracing Gray & Davis branches and service stations in France, England and Germany.

It is this popularity which has led to our need of the largest factory of its kind in the world. You will want in your starter the satisfaction and security given by the great organization back of the Gray & Davis System.

GRAY & DAVIS
STARTING-LIGHTING SYSTEM

GRAY & DAVIS, Inc.
55 Lansdowne Street, Boston, Mass.

blished Weekly by the Motor World Publishing Company, 1600 Broadway, New York

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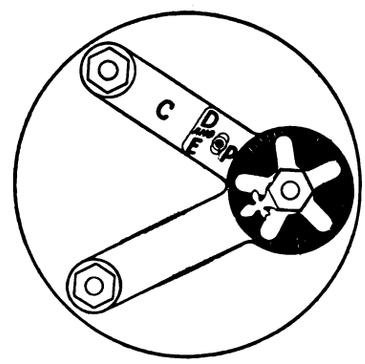
New Automatic Shock Absorber Adjusts Itself to Every Road Condition

Every kind of road makes a different demand upon a car. Generally speaking roads group themselves into three general degrees of ridability — the good — the moderately rough — the very bad.

And recognizing the fact that each kind of road demands a distinctly different degree of spring control—to insure normal spring action at all times—Mr. E. V. Hartford, after a prolonged period of study and experiment — designed the New Automatic Three Degree Friction Absorber — which automatically adjusts itself to varying changes in road conditions and provides the proper tensional control for each.

The New Automatic Shock Absorber is shown in the illustration—its operation is simple and automatic—yet sure and unfailing.

When traveling over good roads—the center arm "C" as indicated, is the only arm of the absorber that works. This is the first or "good road" control — eliminating the slight but noticeable spring oscillation caused by the ordinary road inequalities. Under these conditions arms "D" and "C" remain stationery. When a rougher road or bad cross-walk is met with the arm "C"—by means of arm "P"—which is an integral part of arm "C"—picks up and calls into operation arm "D" on the back side of "C"—doubling the amount of controlling friction. This is the second control. When the very bad type of road is being travelled or crossings particularly severe, arm "E" is also brought into immediate play—imparting the maximum tensional friction of the absorber and supplying a third control designed to overcome the most violent spring rebound.



Reduced upkeep cost—increased comfort and longer tire wear — vastly greater all-round car satisfaction—follow the installation of the

New Automatic

Truffault-Hartford
SHOCK ABSORBER

Attached to the car this obsorber presents the same notable neat appearance that is characteristic of other Truffault-Hartford models. New Automatic Shock Absorbers $60.00 per set of four. Five other models, $15 to $60 a set.

Send for Catalogue

Insist Upon Truffault-Hartfords on Your New Car

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Faith and Reason —Both Big Factors in the Choice of Firestone Tires.

FIRESTONE enthusiasts are of two kinds—the man who knows reasons and the man who accepts results. Both have confidence in the steadiness and sturdiness demonstrated over and over again on track and tour.

One man knows the value in the thickness of tread, its extra "give" and "life," the sharp edges, abrupt angles, deep hollows in the "non-skid" lettering.

He realizes that the Firestone in-built mileage which carries men to victory in the race will be his to command on every road.

But—the other man simply depends on the experience of his friends, added to Firestone racing laurels, and he stands pat on the Firestone showing of Most Miles Per Dollar.

Firestone pneumatic tires are guaranteed when filled with air at the recommended pressure and attached to rims bearing either one or both of these inspection stamps. When filled with any substitute for air or attached to any other rims than those specified, our guarantee is withdrawn.

The Firestone Tire and Rubber Company

"America's Largest Exclusive Tire and Rim Makers"

Akron, Ohio—All Large Cities

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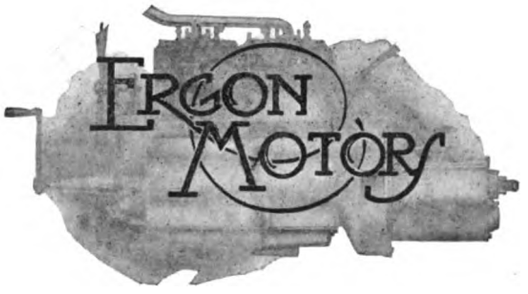


Table of Sizes of Standard Ergon Models:

Model C ---- Bore 3 3-4, Stroke 4 1-2
Model CX---- Bore 4, Stroke 4 1-2
Model D ---- Bore 4 3-8, Stroke 6

(Note: In Model D Timing Gears are replaced by Renold Silent Chain Drive.)

Upon order we can make prompt delivery of any Ergon Standard Motor either as independent or as unit power plant arrangement.

Provision has been made in the crank case of each Ergon Motor designed for pleasure car practice to house any of the standard electric starting-lighting systems.

Ergon Long Stroke Motors have shown a remarkable degree of efficiency in truck practice. We cannot urge too strongly the investigation of Ergon Motors for commercial purposes.

Engineers are always welcomed at our plant. Send for preliminary information and blue prints.

Hazard Motor Manufacturing Company

Rochester, N. Y.

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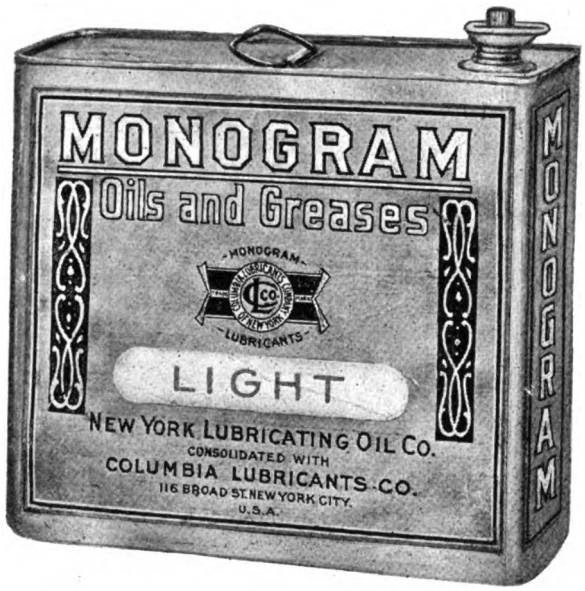
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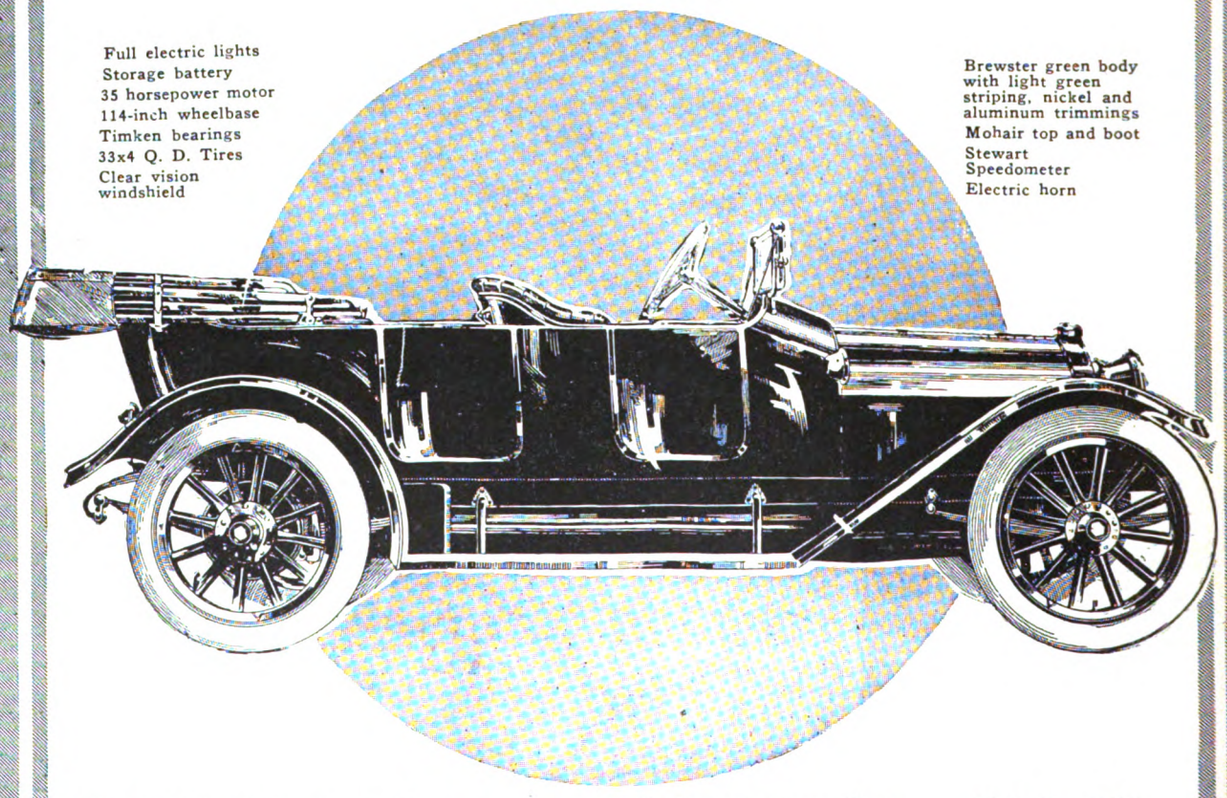
A *larger*, more *powerful* and more *finely finished* car in every respect.

But the price is *lower* than ever.

Prices f. o. b. Toledo

Full electric lights
Storage battery
35 horsepower motor
114-inch wheelbase
Timken bearings
33x4 Q. D. Tires
Clear vision windshield

Brewster green body with light green striping, nickel and aluminum trimmings
Mohair top and boot
Stewart Speedometer
Electric horn



The Willys-Overland Company

1914 Catalogue on request. Please address Dept. 50

Toledo, Ohio

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MOTOR WORLD

Vol. XXXVI New York, U. S. A., Thursday, September 4, 1913 No. 11

NEW PRESIDENT AND A NEW MOTOR FOR PALMER-SINGER

Singer, Sr., and Knapp "Swap" Presidency and Vice-Presidency—Line to Include Magic Motor with Crescent Sliding Valves.

Reports which have been in circulation for some time, that as a result of the investment of new capital, a reorganization or semi-reorganization of the Palmer & Singer Mfg. Co., of Long Island City, N. Y., would be brought about, were partially confirmed late last week, when Charles A. Singer, Sr., president of the company, and Clyde D. Knapp, first vice-president, exchanged places.

President Knapp, it is stated, was elected to represent certain Standard Oil interests which control the Motor & Gear Improvement Co., of New York, which, in turn, controls the rights to the Magic motor in this country. Knapp is also president of the Aristos Co., of New York, which is closely related to the Motor & Gear company.

Other than the changes in the offices of president and first vice-president, the officials of the Palmer & Singer company remain unchanged. Charles A. Singer, Jr., is still second vice-president, G. Stanley Heft treasurer, S. P. Woodard secretary and H. R. Callison assistant treasurer.

While official announcement has not been made, dealers have been so informed, and it therefore is no secret that Knapp's elevation to the Palmer & Singer presidency will be followed by the production of a Palmer-Singer car which will utilize the Magic motor, which in tests has given a remarkably good account of itself. It will be the first American car to employ the German engine and, because of the fact, it is bound to command attention. The newcomer, however, will not interfere with the manufacture of the Palmer-Singer poppet valve models.

The Magic motor is not unlike the Knight-Davidson motor in construction, the principal difference being that whereas both employ sliding crescent valves in place of the usual poppet valves, those of the Magic motor come in contact with the pistons and those of the Knight-Davidson do not. The valves in the Magic motor are actuated by camshafts and small bell cranks operating in slotted grooves, thus providing for positive timing. The motor is otherwise distinctive by reason of the use of separate cylinder heads on a four-cylinder block casting.

Fisher Forms a Canadian Company.

Frank E. Fisher, who resigned the management of the Studebaker Corporation's Canadian factory several months since, has organized the Fisher Motor Co., with an authorized capital of $150,000, which has acquired the former Tudhope Motor Co. plant in Orilla, Ont., which has been shut down for several months. It is the intention to continue the manufacture of cars at Orilla until January 1st, when the industry will be transferred to Walkerville, Ont., opposite Detroit. Fisher is the president of the company which bears his name. Among his associates are C. F. Geraghty and F. W. Vollans.

Would Forbid Flag as Trademark.

Representative Murray, of Massachusetts, has introduced a bill into Congress which seeks to prohibit the use of the national flag as a trademark or other commercial symbol and which would limit its use to military and patriotic organizations. There already exists a law forbidding the placing of advertising matter of any sort on the flag.

Campbell Assumes Colby Presidency.

John Campbell, of Rockwell, Iowa, has been elected president of the Colby Motor Co., of Mason City, Iowa. His son, John L., already was treasurer of the company and a brother, Joseph C., a member of the board of directors.

MITCHELL-LEWIS REINS PLACED IN McLAREN'S HANDS

Former Tire Man Is Made President and Official Make-up Otherwise Altered—Bankers Lessen Their Control of Affairs.

After having been directed and otherwise managed by an executive committee representing Chicago and New York bankers, since they refinanced the company in the fall of 1911, the Mitchell-Lewis Motor Co., of Racine, Wis., has been, in a measure, restored to its stockholders. At any rate, the executive committee management has been eliminated and H. L. McLaren has been elected president and general manager, to succeed Joseph Winterbotham, Jr., who was appointed the bankers' representative in 1911 and who later formally assumed the presidency when William Mitchell Lewis relinquished that office.

The new head of the company was at one time identified with the United States Tire Co., but for the last year or so has been vice-president of the Racine Rubber Co.

The Mitchell-Lewis charter, which was amended when the bankers assumed control, was re-amended last week, in order to eliminate executive committee control, and permit of the new order of things, which carried with it not only a new president but practically an entire slate of new officers.

John W. Bate, factory manager of the Mitchell-Lewis company since Mitchell cars first were built, has been elected first vice-president and will continue to serve as factory manager. The other officers are: William T. Lewis, second vice-president; F. L. Mitchell, treasurer; H. E. Redman, secretary; O. C. Friend, general sales manager; G. W. Morgan, purchasing agent; M. J. Gillen, general counsel

According to the official announcement, "the bankers and all the stockholders are not only of one accord as to this change but are loyally supporting it for five years."

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FIXES DATE FOR ALLOTTING SHOW SPACE; ISSUES RULES

Chamber Whipping Details of National Exhibitions into Shape—Pleasure Cars Explicitly Defined—Other Regulations.

October 2nd has been set as the date for the first allotment of space at both the New York and Chicago shows. The allotment, which covers all applications received up to noon of September 27, will be made at the New York office of the Automobile Chamber of Commerce and, as heretofore, members of the Chamber will be served first and thereafter other applicants will draw for choice of positions. This, of course, does not apply to members of the Motor & Accessory Manufacturers, Inc., for whom, as usual, a block of space has been set aside and who will make their own apportitonment. Priority will be given to those who have exhibited at the largest number of shows held under the auspices of the Chamber of Commerce or its predecessors, the National Association of Automobile Manufacturers and the Automobile Board of Trade. In the event of conflict, the order of drawing will be decided by lot.

The application blanks, rules and space diagrams for both shows made their appearance this week. They disclose that the Chamber of Commerce has officially adopted the resolution affecting exhibitors at unsanctioned shows which was enforced by its predecessors, the line of demarkation or disqualification, however, being placed at unsanctioned shows held after July 18, 1913; this new date has the effect of restoring to good standing all of those who may previously have been disqualified.

As is already well known, both the New York and Chicago exhibitions will consist exclusively of pleasure vehicles, which restriction is made even more explicit by being defined as "passenger cars designed for private use," which means that 'buses and similar conveyances for public utility purposes will not be admitted. No exhibitor other than a manufacturer of complete automobiles will be permitted to show a body mounted on a complete chassis, although bodies may be shown mounted upon stands or trestles.

All exhibitors are prohibited from displaying "apparatus which has painted thereon any advertising matter, trade mark or name, whether the same be painted upon the apparatus direct or upon separate plates."

Manufacturers are also forbidden to display goods in operation if "such goods are noisy or objectionable to surrounding exhibitors." Also special permission will be required for the display of any mechanically operated or illuminated exhibit, which likewise is the case with printed matter or souvenirs.

Special permission also must be obtained for the display of horns, bells, whistles and alarms of all kinds and no permission will be granted except on the undertaking of the exhibitors that reeds shall be removed, or such other alterations made as to render impossible production of sound by the instrument; it is specifically provided that disconnection of wiring will not be considered sufficient.

Except those provided by the management, no "Sold" or other placards and no pictures of factories, stores, cars or other subjects will be permitted to be displayed.

The admission fee will be 50 cents, except on Wednesday, when it will be doubled. Previously there were two so-called "dollar days." So-called trade tickets, which will be issued in the form of special invitations, will be sold in lots of not less than 50, but their cost will be 50 cents each. Bona fide automobile dealers who prove their identity will, as heretofore, be furnished with an agents' admission badge. Attendants also will be admitted by badge and for the first time there will be a special form of badge for the use of female attendants.

Uniformity of decoration and equipment, of course, will prevail, the price per square foot, including equipment, ranging from $1.50 to $1.10 at Grand Central Palace, New York, and $1.25 to 75 cents at the Coliseum and Armory in Chicago. The sub-letting of space is prohibited.

For the first time, Chicago practice will prevail in New York and the Grand Central Palace show be inaugurated at two o'clock in the afternoon instead of eight P. M., as hitherto has been the rule. Thereafter the doors will open at 10 A. M. each day and close at 10.30 P. M.

Lops $5 off Price of Newtone.

Having increased the output of Newtone horns to more than 2,700 a week, the Automobile Supply & Mfg. Co., of Brooklyn, has reduced the price of the horn to $15, a cut of $5. During the year 1911 the average weekly production of Newtone horns was 350, in 1912 it was increased to 900, and during the first six months of the present year to 2,765, two enlargements of the plant permitting the increase. A further increase of facilities, it is expected, will enlarge the factory to 5,000 Newtones weekly. In addition, the Brooklyn company continues to produce bulb horns on a surprising scale. For the present year, it places its production at 400,000 of such horns.

COUZENS THROWS LIGHT ON RUMORS OF FORD AFFAIR

Makes Plain Company's Intentions as to Wire Wheels—Denies Connection with Dodge Car—Commends Motor World's News.

While it is no secret that the Ford Mo Co., of Detroit, is making some use of wi wheels, published reports that it had adop ed them, much less being engaged in the erection of a plant for their production were denied late last week by none other than James Couzens, vice-president and treasurer of the Ford company, whose right to speak by the book is not to be challenged.

"There is absolutely no foundation in the rumor that we are going to use all wire wheels next year," he said in reply to Motor World's direct question. "Neither is there any truth in the report that we are building a plant to make them. We may use wire wheels after the first of the year or when we get around to it, but we are not going to adopt them in entirety and we are not going to manufacture those we do use. The story to that effect published in one of Motor World's contemporaries is absolutely without foundation."

Couzens also thoroughly punctured the entertaining report that the Ford company is or would be in some way interested in the Dodge car, which is to be produced by Dodge Bros., of Detroit, who are Ford stockholders and who for years have manufactured certain Ford parts. On the face of things, as Motor World stated last week, the story that Ford would be interested in the making or marketing of the Dodge car was highly improbable, a view which is even more emphatically expressed by Couzens.

"We know nothing about the car that Dodge Bros. are to build, have no connection with it, financially or otherwise, and have no idea when it is to be exhibited or the price at which it is to be sold," said Couzens. "There is nothing in such reports."

Commending as "good business" Motor World's policy of confirming news before printing it, Couzens remarked a state of mind that exists in many high places in the trade.

"We believe the publishing business has been injured greatly," he said, "by the fact that much of what is printed is unreliable. Being on the inside of so many things I fear almost to believe anything I see in the papers, or, if inclined to believe any of it, only after it has been greatly discounted."

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L. J. G. COMPANY ABANDONS WHITE PLAINS; GOES WEST

Grossman Hopes to Find More Profitable Manufacturing Territory—Success that Failed to Come in Suburb of New York.

After having tried it for several years, George J. Grossman, president of the G. J. G. Motor Co., has become convinced that there are better places than White Plains, N. Y., for the manufacture of motor cars. Accordingly, he has leased his plant in that village to a publishing firm and is seeking a new location for his motor company in the West.

White Plains is practically a residential suburb of New York, and when Grossman first established himself there he erected what was known as the Mammoth Garage, a term which aptly fitted the structure. It was then one of the largest one-floor garages in the country, containing 21,600 square feet. The building, a fireproof, concrete, postless structure, is 80 x 270 feet and is splendidly appointed, having two separate heating plants and its own electric lighting and power outfit.

It was generally understood that Grossman built the place largely for the benefit of his two sons, but as a garage it proved unprofitable and Grossman, therefore, gradually drifted into the manufacture of complete cars. He called his productions the Cruiser, Pirate and G. J. G., but they failed to become real factors in the business, and of late he has devoted himself chiefly to the production of chassis, with which he specially sought the patronage of carriage builders. His venture in that direction likewise failed to prosper, and it has been a matter of speculation how much longer he would continue to pour money into the enterprise. As stated, he now is convinced that the West holds more prospect of success, but just where he will locate has not yet been settled.

Grossman, himself a man of means, at one time held the Cadillac agency for New York City, but about five years since relinquished it, and thereby permitted another snug fortune to escape him.

Seeking to Revive Lansden Business.

Due to the efforts of H. L. Davisson, trustee in bankruptcy, the property of the Lansden Co., which several months since was removed from Newark, N. J., to Allentown, Pa., is being shipped back to Newark, where it will be reinstalled in the same factory it previously occupied and the work of producing Lansden electric vehicles will be recommenced. John B. Wickery, the former sales manager of the Lansden Co., is acting as manager for the trustee and the work of reestablishing the Lansden business will be conducted under his direction. It is stated that the company has orders on hand sufficient to justify the move and that with proper handling the claims of all creditors can be satisfied.

Commer Truck Makers Sue for $49,000.

Commercial Cars, Ltd., of Luton, Eng., manufacturer of Commer trucks, this week filed a complaint in the United States District Court for the Southern District of New York against Clarence F. Wyckoff and Ernest S. Partrtidge, demanding $49,704.54; this sum is claimed on bills of exchange made by the Commer company between October 31, 1911, and February 9, 1912, and accepted and endorsed, it is claimed, by Wyckoff and Partridge, who were members of Wyckoff, Church & Partridge, the Commer distributers in America before they went into bankruptcy. The claim is made up of 28 separate causes of action, and contains 169 clauses. The claims range from small amounts up to sums slightly in excess of $2,000.

Grossman Adds "Manufacturing" to Name.

That its corporate name may more clearly designate its vocation, the Emil Grossman Co., of New York City, manufacturer of "Red Head" spark plugs and other accessories, has made application to the Supreme Court for New York county for permission to change its name to Emil Grossman Mfg. Co. The move entails but little change in the company, its personnel and capitalization remaining the same; as the name now stands, the company states, it might mean jobber, selling organization or manufacturer.

Cutting Indorsers Can't Get Release.

W. W. Clark and F. L. Holmes, of Jackson, Mich., as indorsers of notes of the bankrupt Cutting Motor Car Co. in that city, have failed in their efforts to have released nine attachments which are pending on the property of the company. Clark applied for an order of discontinuance, but Judge Cheslet last week denied the request. He held that the attachments were in proper form and amply sustained by proof.

Making More Room for Hazard Motors.

The Hazard Motor Mfg. Co. is erecting a 60 x 130-foot addition to its plant in Rochester, N. Y. The enlargement will permit the output of the Hazard company's motors to be increased to approximately 5,000 a year. At present, several departments are operating 20 hours per day to keep pace with the demand.

MONOGRAM OPENS CAMPAIGN AGAINST OIL SUBSTITUTERS

Hales International "League" into Court and Demands $10,000 Damages—Weed Also Pursues Bidwell's "Organization."

As the opening move in a campaign against the substitution of other oils for the Monogram brand, the New York Lubricating Oil Co. filed suit this week in the Supreme Court for New York county against the International Automobile League, of Buffalo, for $10,000 damages and an injunction restraining the "League" from sending out other oils under a Monogram mark. Service was secured on Alfred C. Bidwell, the president of the "League," at 270 Division street, Buffalo, N. Y.

The specific instance upon which the charge of substitution is based is the alleged shipment by the "League" to J. Mosby West, of Richmond, Va., of a barrel of oil which was marked "Monogram Medium," both on the barrel and on the shipping tag attached. The oil was shipped to Mosby, was located by the Monogram company and shipped to New York City, where it is held as evidence. That substitution of other oils for Monogram has been made by other offenders is the contention of the lubricating company. The Monogram company brands its mark onto the head of the barrel and in the case of bottles and tins a different but distinctive mark is used. In its complaint the Monogram company goes into a lengthy recital of the nomenclature of the company and the length of time and amount of money which have been spent in building up a reputation for its product, and it is averred that the name Monogram has become allied in the public mind with a high grade of lubricating oil.

While the "League" did not duplicate the Monogram style and mark, but merely painted the name upon the barrel, it is charged that the defendant organization "applied a brand containing the word Monogram in a manner similar to that in which the plaintiff has been and is accustomed to brand the plaintiff's barrels, in such manner as to deceive the public into the belief that the oils so branded and offered for sale by the defendant were in fact the oils manufactured and vended by the plaintiff."

As regards the motive in the substitution, it is claimed that "the sole object of the defendant in such use of the word Monogram is to deceive the public and the customers of the plaintiff into the belief that they were purchasing plaintiff's goods when actually they were the goods of the defend-

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ant." Allegations of unfair competiiton and fraudulent methods of merchandising are made in the papers. No statement as to the quality of the oil shipped is made and the matter of price is not touched upon, but those who are familiar with the "League" are aware of the fact that "members" are supposed to get "standard" articles at cut prices.

Aside from the Monogram suit and the recent financial internal trouble which beset the "League" and Bidwell, he is also being pursued by the Weed Chain Tire Grip Co., which January 13th last secured against him a decree restraining him from infringing the Parsons patent, No. 723,299, and directing that an accounting be taken to ascertain the damages due the Weed company. The present trouble is due to the accounting.

To conduct these proceedings it is necessary for the "League's" books to be examined, and for that purpose Bidwell and his bookkeeper were subpoenaed into court in Buffalo last week. But Bidwell sent his lawyer and failed to appear. His excuse was that he had furnished heavy financial backing for an Elks' ball game which was being played that day and could not forsake the ball tossers for the accounting.

Accepting the excuse, the accounting proceeded—for a short time—and an effort was made to garner information from the bookkeeper, but what the Weed representative learned from the books and the bookkeeper did not require many sheets of paper to record. The examination was adjourned to September 24.

In a dicker over a prospective settlement without an accounting, a Weed lawyer said, "Well, let's see; you've got 60,000 members——"

"No, no!" interrupted the "League's" attorney. "That's what we advertise; we haven't got as many as that."

Michigan Plant Not Sold to Gerber.

Spreadeagle reports that the Edw. F. Gerber Co., of Pittsburgh, had purchased the plant of the bankrupt Michigan Motor Car Co., in Kalamazoo, are repudiated by the receiver, the Detroit Trust Co., which denies that the Gerber company is even negotiating for the property. The Gerber people handled Michigan cars and buggies on a large scale and it is understood that their notes for advance payments to a large amount were among the many discounted by the bankrupt in its effort to kept afloat.

The Westinghouse Air Spring Co., of Pittsburgh, Pa., which manufactures the shock absorbers developed by George Westinghouse, has added $500,000 to its capital stock. The increase is from $2,000,000 to $2,500,000.

DRAFTS FOR FAULTY CARS NOT BINDING ON DEALERS

Nation, of Oklahoma City, Wins Out in Suit Over Cars He Had Accepted —Puts Them in Storehouse and Then Has Them Attached.

That a dealer is not obliged to pay for cars which are found not up to specifications even though the dealer has unloaded them and signed the drafts which accompanied the bills of lading, is the gist of a decision rendered last week by the United States District Court in Oklahoma City, Okla., in a controversy involving the Michigan Buggy Co., of Kalamazoo, Mich., the Kalamazoo Savings Bank and the National Motor Car Co., of Oklahoma City, a dealership house of which W. E. Nation is the head.

National contracted October 5, 1911, for three Michigan cars to be shipped at once on notes of 30, 60 and 90 days; the cars were shipped December 18, 1911, with bills of lading for the terms specified in the notes. Upon the arrival of the cars Nation refused them because of the terms and also because he was not permitted to examine them before accepting them. He states, however, that he was persuaded by a representative of the Michigan company to sign the drafts and take the cars, and that after he got them upon his salesroom floor he found them not according to the contract.

He immediately placed the cars in storage, subject to the order of the Michigan company, and let the drafts go to protest, whereupon the Kalamazoo Savings Bank brought suit, claiming to have been the innocent purchaser of the drafts. Nation's answer was that there was conspiracy between the bank and the Michigan company to commit fraud by making Nation pay for cars not up to order. The court dismissed the case and denied a new trial.

Nation then attached the cars as the property of the Michigan company on the Nation claim for the original deposit and damages. The Michigan company has indicated its intention of contesting the matter further, and Nation states that he has no intention of relinquishing the advantage thus far gained.

Grand Rapids Truck Brings $17,050.

At the receiver's sale of the property of the Grand Rapids (Mich.) Motor Truck Co. last week, the physical assets were purchased for $17,050 by Frank T. Hulswit, a former official of the company, who also assumed the mortgage on the real estate. It is possible that Hulswit will undertake the formation of a new company, although it is not unlikely that negotiations for consolidation with the Michigan Hearse & Carriage Co., which fell through when the truck company's financial condition became apparent, will be renewed on new lines.

Eveland Manager Killed in Wreck.

Howard F. Martin, general manager of the Eveland Engineering Co., of Philadelphia, Pa., and his wife were killed Tuesday morning, 2nd inst., in a wreck on the New York, New Haven & Hartford Railroad near New Haven, Conn., when one train crashed into the rear end of the train ahead which had been stopped. A score were killed and many injured.

Martin was 45 years old and originally lived in Bridgeport, Conn., but had resided in Pennsylvania for 20 years; he was general sales manager of the Pennsylvania Steel Co. for many years, recently taking a position with the Eveland company in Bryn Mawr, his residence, both he and Mrs. Martin were active in church work and Martin was a member of the Art Club and the Manufacturers' Club in Philadelphia.

He left August 8th on a vacation with Mrs. Martin and Mr. and Mrs. Samuel S. Eveland; they toured Connecticut, and which the Martins went to Maine, where they were returning at the time of the wreck.

The Eveland company originally brought out the Vulcan electric gear shift and which is now the U. S. L. electric lighting and starting system.

Shanks Parts from Kelly Truck.

Quite unexpectedly, Charles B. Shanks who last year became general sales manager of the Kelly-Springfield Motor Truck Co., of Springfield, Ohio, has severed his connection with the company, his action being the result of a dispute over a five-year contract entered into in September, 1912.

At that time E. S. Kelly was president of the company. Later, or within ten days of the time the contract was made with Shanks, control passed, via purchase, to the American Light & Traction Co. of New York. At the same time the name of the company was changed from the Kelly Motor Truck Co. to the Kelly-Springfield Motor Truck Co.

Shanks's contract apparently was taken over by the new company as salary and commissions were paid under its terms without protest. Subsequently the new company announced that it repudiated the contract, but Shanks refused to waive claim, with the result that a situation developed which caused a parting of the ways. Shanks has announced no plans for the immediate future.

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The Week's Incorporations

Iowa City, Iowa—Johnson County Motor Racing Co. Corporators—O. H. Carpenter and others.

Rosendale, Mo.—Wright Auto Co., under Missouri laws; to operate a garage and deal in motor cars.

Rutherford, N. J.—Sam Dressler, Inc., under New Jersey laws; authorized capital, $50,000; to buy and sell motor cars.

Seattle, Wash.—R. W. Abbott Motor Car Co., under Washington laws; authorized capital, $5,000. Corporators—R. W. Abbott and E. A. Manion.

Thompsonville, Conn.—Blissland Leather Co., under Connecticut laws; authorized capital, $25,000; to produce automobile top and upholstery leathers.

Seattle, Wash.—Automobile Accessories Co., under Washington laws; authorized capital, $25,000. Corporators—O. D. Colvin, J. C. Burlock and others.

Chicago, Ill.—Ogren Motor Car Co., under Illinois laws; authorized capital, $25,000. Corporators—George H. Wilkins, Carl E. Duval, Fred H. Johns.

Kansas City, Mo.—Thorp-Allen Motor Co., under Missouri laws; authorized capital, $10,000. Corporators—Wm. R. Thorp, H. B. Thorp, H. L. Allen.

East Palestine, Ohio—National Tire & Rubber Co., under Ohio laws; authorized capital, $150,000. Corporators—C. J. Davis, R. F. Taggart, William Smith.

Farmington, Mo.—St. Francois Motor Co., under Missouri laws; authorized capital, $4,000. Corporators—Martin L. Clardy, Jr., R. P. Lang, Carlisle E. Rozier.

Wilmington, Ohio — Wilmington Auto Co., under Ohio laws; authorized capital, $10,000. Corporators—Carl S. Bangham, Frank L. Gallup, M. H. Hoskins.

Cleveland, Ohio—Rauch & Lang Electric Car Co., under Ohio laws; authorized capital, $10,000. Corporators—William H. Marlatt, C. F. L. Weiber, Jr.; E. J. Stahl.

Seattle, Wash. — Northwestern Automobile Mfg. Co., under Washington laws; authorized capital, $2,750. Corporators—Frank W. Bishop, Clarence G. Vail and others.

Oklahoma City, Okla.—Hupmobile Sales Agency, under Oklahoma laws; authorized capital, $5,000. Corporators—W. H. Say, L. S. Liggett, Harry Pole, all of Oklahoma City.

Sheboygan, Wis.—Town of Herman Auto Transit Co., under Wisconsin laws; authorized capital, $8,000. Corporators—William Grosshuech, August Frome, Jr., W. F. Buscher.

Los Angeles, Cal.—Machinery & Motor Exchange, under California laws; authorized capital, $10,00. Corporators—C. E. Shaul, T. E. Smith, M. Wantoch, A. Schaffer, R. J. Gardner.

Cairo, Ill.—Angier Automobile Service Co., under Illinois laws; authorized capital, $200; to operate an automobile taxicab service. Corporators—W. E. Angier, Mrs. P. M. Angier, D. C. Morrison.

Coffeyville, Kan.—Isham Garage Co., under Kansas laws; authorized capital, $5,000; to operate a garage. Corporators—E. H. Hess, George N. Upham, Sarah H. Hess, Charles D. Welch, Guy Bayless.

Los Angeles, Cal.—International Automobile League of California; under California laws; authorized capital, $200,000. Corporators—H. E. Rudd, L. E. Hepburn, M. M. Driscoll, S. H. Tuck, J. A. Stone.

Chicago, Ill.—Auto Hoist Co., under Illinois laws; authorized capital, $50,000; to handle automobiles, accessories, patents and inventions. Corporators—W. S. Stewart, L. E. Long, William P. MacCracken, Jr.

Chicago, Ill.—Orphans' Automobile Day Association, under Illinois laws; to conduct automobile outings for poor and orphan children. Corporators—George B. Foster, Homer E. Mesz, Burt B. Parker.

Glencoe, Ill.—Glencoe Garage & Livery Co., under Illinois laws; authorized capital, $5,000; to conduct a garage and general livery business. Corporators—Thomas W. Whitson, Isaac S. Brill, Isaac B. Lipson.

Muskogee, Okla.—Muskogee Vehicle & Machinery Co., under Oklahoma laws; authorized capital, $10,000; to deal in general power machinery and vehicles. Corporators—R. A. Lester, N. Lester, Walter Van Allen.

Toledo, Ohio—Toledo Cooperative Garage Co., under Ohio laws; authorized capital, $10,000; to operate a garage. Corporators—Harry L. Stebbins, Metha L. Stebbins, John Felkes, D. D. Felkes, Herbert Felkes.

Louisville, Ky.—Helical Shock Absorber Co., under Kentucky laws; authorized capital, $120,000; debt limit, $1,000; to manufacture a shock absorber. Corporators—George C. Knnapel, M. C. Fullenlove, C. C. Hieatt.

St. Louis, Mo.—Anslem-Ganahl Motor Car Co., under Missouri laws; authorized capital, $5,000; to buy and sell motor cars, parts and accessories. Corporators—Roy W. Anselm, Leo F. Ganahl, Richard and J. Ganahl.

Kenosha, Wis.—R. J. Murray Mfg. Co., under Wisconsin laws; authorized capital, $10,000; to conduct a general metal manufacturing and repairing business. Corporators—Raymond J. Murray, John B. Butcher and others.

New York, N. Y.—H. C. Well Perfect Motor Co., under New York laws; authorized capital, $25,000; to manufacture and deal in motor cars. Corporators—H. C. Well, M. M. Well, F. B. Knowlton, all of New York City.

Columbus, Ohio—Central Auto Vehicle Co., under Ohio laws; authorized capital, $10,000; to deal in automobiles. Corporators—John K. Kennedy, S. A. Webb, Clarence M. Addison, Wilbur E. Benoy, Allie V. McLaughlin.

Pittsburgh, Pa.—Chester Rubber Tire & Tube Co., under Delaware laws; authorized capital, $250,000; to manufacture, sell and deal in tires and tubes. Corporators—Morgan Howells, Ephriam Lyon, C. E. Jarvin, all of Pittsburgh.

St. Louis, Mo.—Palmer-Meyer Motor Co., under Missouri laws; authorized capital, $100,000; to manufacture motor cars and accessories and equip a repair shop. Corporators—Charles W. Palmer, Frederick C. Meyer, Ferdinand A. Meier.

New York, N. Y.—S. & K. Tire Co., under New York laws; authorized capital, $10,000. Corporators—James J. Coomber, 358 West 15th street, New York City; Herman Senner and Bernard J. Kaplan, both of 115 West 30th street, New York City.

New York, N. Y.—Frederick Smith Auto Sales Co., Inc., under New York laws; to sell cars and supplies. Corporators—Alanson P. White, East Orange, N. J.; A. H. White, Passaic, N. J.; Harry Wolkof, 583 Bedford avenue, Brooklyn, N. Y.

Brooklyn, N. Y.—Ohlsson Spring Tire Co., under New York laws; authorized cap-

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ital, $30,000; to manufacture and sell motors and accessories. Corporators—Charles J. Ohlsson, Joseph Maddocks, Peter J. Butterly, 46 Berkeley place, Brooklyn.

Utica, N. Y.—H. W. Skinner Motor Car Co., Inc., under New York laws; authorized capital, $5,000. Corporators—Harry W. Skinner, New Hartford, N. Y.; Edmund C. Richards, 12 Miller street, Utica; David G. Comstock, 479 Prospect place, Brooklyn, N. Y.

Indianapolis, Ind.—United Supply & Accessories Co., under Indiana laws; authorized capital, $10,000; to deal in automobiles, aeroplanes and other vehicles. Corporators—E. Beveridge Dill, Ernest L. McCloy, Edward C. Ilg, Charles E. Rochat, Geo. L. Kempf.

New York, N. Y.—Jesco Equipment Co., Inc., under New York laws; authorized capital $12,000. Corporators—Frank D. Boulanger, 323 Canal street, New York City; Alfred Ware, 200 Hudson street, New York City; George W. Wacker, 60 Ely place, East Orange, N. J.

Brooklyn, N. Y.—South Brooklyn Garage, Inc., under New York laws; authorized capital, $5,000. Corporators—Hal C. Washburn, 256 16th street, Brooklyn; Chas. Bestelmann, 1720 Webster avenue, New York City; August W. Rath, 405 Fairmount avenue, Jersey City, N. J.

Recent Losses by Fire.

Lincoln, Ill.—Wasson Co., garage damaged. Loss, $5,000.

Natchez, Miss.—Natchez Auto & Supply Co., garage and three cars destroyed. Loss, $12,000.

Highland Mills, N. Y.—Thompson Garage, Frank H. James, proprietor; destroyed. Loss not stated.

Long Island City, N. Y.—Edwards Motor Car Co., Borden avenue; warehouse destroyed. Loss, $15,000.

Philadelphia, Pa.—Joseph Kane & Co., 1244 North Hutchinson street; garage destroyed. Loss not stated.

Cedar Rapids, Ia.—Barton Motor Car Co., 606-8 2d avenue; garage and fifteen cars damaged. Loss, $25,000.

Jamaica, N. Y.—Frank Baerlein, Newton road and Jamaica avenue; garage damaged and thirteen cars destroyed. Loss, $25,000.

Changes in Capitalization.

Detroit, Mich.—Grant Motor Co., from $165,000 to $200,000.

Detroit, Mich.—Detroit Auto Exchange, from $8,000 to $10,000.

St. Joseph, Mo.—Holliday Motor Car Co., from $10,000 to $15,000.

PROMINENT MEN IN TRADE WHO ASSUME NEW DUTIES

Resignations and Promotions That Serve to Place Many Workers in New Places—Few Leave the Industry.

H. E. Doty has been appointed manager of the Haynes branch in Chicago. He succeeds Webb Jay, resigned.

Harry M. Newman has been promoted to the post of manager of the Moon Motor Car branch in Chicago, of which he became sales manager in March last. Previously he was identified with the Washington (Pa.) Automobile Co., which handled Moon cars in that part of the Keystone State.

Charles R. Culver, sales manager of the Knox Automobile Co., of Springfield, Mass., with which he has been identified almost from its inception, has resigned that connection to become sales manager of the Stoddard Motor Car Co., of Springfield; the latter handles the Pierce-Arrow car and the Selden truck.

C. A. Hamilton has been elected president of the Racine Mfg. Co., the body building concern located in the Wisconsin city of that name. He succeeds Frank K. Bull, who retired in order to devote himself wholly to the J. I. Case T. M. Co., of which he is the head. Previously Hamilton was vice-president of the Lavigne Gear Co., of Racine, and at one time he was associated with the Wisconsin Engine Co.

Frank E. Smith, former general manager of the Maxwell-Briscoe Newcastle Co., has been elected vice-president of the American Motors Co., of Indianapolis; he will have special direction of factory production. He succeeds P. S. Menasco, who has gone to the Pacific Coast to assume charge of the American interests in that part of the country. Smith is one of the best known automobile men in Indiana and acquired a high reputation during the four years he was in charge of the Maxwell-Briscoe Newcastle property. When it became involved in the failure of the United States Motor Co., Smith was appointed receiver and added to his repute by earning a handsome profit, while all others of the United States Motor group netted a loss.

Wants Balance Due on Two Garfords.

Claiming that John Stanley Frazer, of Frazer & Burchenal, contractors at 1 Madison avenue, New York City, failed to meet notes for $7,500 given as part payment on two 6-ton Garford trucks, the R. & L. Co., Garford dealer in the metropolitan district, filed suit this week in the Supreme Court for New York county against Frazer. It is claimed that Frazer paid $3,000 when he got the trucks, June 5, 1913, and arranged to pay the balance of $8,000 in 16 monthly notes of $500 each, but that he paid only the one due July 31.

Minor Business Troubles.

Proceedings in bankruptcy have been instituted against the Standard Vulcanizing & Tire Co., of Nashville, Tenn. The petitioners are Paul Moore, Rocky City Tin & Copper Works, Chester Motor Car Co., John W. Chester and J. Melvincove.

Because the Michigan Buggy Co., which failed, owed the Sandusky (O.) Auto Parts & Motor Truck Co. $150,000, the latter has been placed in the hands of receivers at the request of stockholders; William M. Harsh, one of the receivers, will superintend the mechanical end of production, and the other, Daniel S. Storms, will manage business affairs. Despite the fact that $300,000 will be needed to pull the parts company through, it is believed this can be done as the Michigan account proves of any material value.

Theodore A. Kaplan, who was manager and proprietor of the Kaplan Auto Supply Co., which opened up in February, 1912, in Newark, N. J., and which later went into bankruptcy, has been ordered by the court to explain what became of $3,000 worth of stock which is alleged to have disappeared during the three months prior to the failure. Last February an inventory showed assets of $4,160 and liabilities of $6,2[illegible], while at the time of the bankruptcy the assets had dwindled to less than $3,[illegible] and the liabilities exceeded $7,000.

The Tobin Whichway Signal Co., of New York City, which set out to manufacture a tail lamp signal which indicated the driver's intention to turn to the right or left or stop, was the object of a petition in bankruptcy filed last week in the Federal court in New York City; the petitioners and claims are Stanley & Patterson, Inc., $713; U. T. Hungerford Brass & Copper Co., $73; H. W. McCandless & Co., $104. It is charged that the company committed an act of insolvency when it permitted Horseless Age to secure a judgment for $496. The liabilities are said to be $13,000 and the assets $2,[illegible]. The company incorporated in May, 1[illegible], with $50,000 capital and John W. Tobin as president and treasurer.

H. S. Firestone, president of the Firestone Tire & Rubber Co., returned from abroad last week. He had been absent six months, which were spent chiefly in the pursuit of pleasure in company with his family.

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In the RETAIL WORLD

A. L. Crowthers & Son, of Coshocton, Ohio, are about to erect a garage and machine-shop.

The King Bros. Machine Co., of Spring City, Tenn., is about to open a repair-shop in Harriman, in the same State.

The Highland Garage, of Louisville, Ky., is erecting a fireproof machine-shop; the garage is located at 1064 Bardstown road.

Edward L. Bellman has opened a garage in Fort Atkinson, Wis. It will be operated in connection with the Hotel Lawton.

Prewitt & Howell, hardware dealers in Mt. Sterling, Ky., have entered the commercial car trade; they have the I. H. C. agency.

F. E. Tessinger, formerly of Chatsworth, Ill., has opened a garage in Melvin, in the same State; he has leased a portion of the I. O. O. F. building.

Wallace L. Wilcox & Co., of Providence, R. I., have taken possession of a new salesrooms at 320 Broad street; the concern handles Franklins.

Henry and Earl Billings are about to open a supply and accessory store in Milwaukee, Wis. They have leased a building at 181 4th street.

James E. and Leslie E. Newell have formed the Kissel Motor Car Co. in St. Louis, Mo., and have located at 5802 Delmar boulevard; they will handle the Kissel line.

John F. Reus, a dealer, has purchased the First Church of Christ, Scientist, in Baltimore, Md., and will remodel it into a garage; it is located on Mount Royal avenue and has a frontage of 90 feet.

F. W. Van Sant, for several years a car and accessory salesman in Minneapolis, has branched out for himself; he has the Minnesota agency for the Sandbo starter and is located at 100 Corn Exchange.

J. H. Yonkers, of Toledo, Ohio, formerly with the Cornelius-Hohly Auto Sales Co., has branched out for himself; he has secured the agency for the Mayer carburetter and will locate at 133 Erie street.

Porte R. Wheeler and P. J. Wood have entered the trade in Peoria, Ill., under the style Wheeler & Wood; they have secured the Norwalk agency and have opened salesrooms at 105 South Jefferson street.

F. H. Satterlee and R. E. Fosness, who operate in Minneapolis, Minn., under the style Satterlee & Fosness, have opened a new garage at 215 6th avenue; they handle Pope-Hartford cars and Quaker tires.

L. W. Fraser, formerly Canadian factory representative of the Hupp Motor Car Co., has entered the trade as a dealer; he has the Hupmobile representation in Western Ontario with headquarters in Windsor.

The Buick Automobile Co., of Seattle, Wash., has leased for five years a building which is being erected at Harvard avenue and Pike street; it will be ready for occupancy December 1. A. S. Eldridge is manager.

William Stellway, proprietor of the Metropolitan Garage, at 57th and Chestnut streets, Philadelphia, Pa., has secured plans for a one-story garage, 140 x 180 feet; he will build on 33d street above Jefferson street.

F. B. Rohtert, of Nashville, Tenn., has purchased the plant of the Roemer-Worrick Foundry & Machine Co., in Bowling Green, Ky. He will add to the equipment and will enlarge the machine-shop to care for automobile work.

The Hearsey-Willis Co., of Indianapolis, is about to take possession of a new three-story building at 339 North Capitol avenue; the company, which is now located at 117 West Market street. is Indiana distributer of Hupmobiles.

The Ohio-Buick Co. has been formed in Cleveland, Ohio, to take over the business of the Buick branch in that city; G. G. Peckham, formerly of the Peckham Motor Car Co., of Dayton, Ohio, is president and general manager.

S. T. Hutchinson, owner of the Badger Garage, in Lake Geneva, Wis., has taken over the Lake Shore Garage, formerly owned by O. E. Romare, and will operate both; Romare will open a garage in Williams Bay, in the same State.

The Garber-Buick Co., of Saginaw, Mich., has been renamed Garber-Collins-Buick Co. The addition of the name of Collins followed the entry of John S. Collins, formerly manager of the Buick Motor Co., of Buffalo, N. Y., into the company.

W. H. Sill, for fifteen years with the Minneapolis Lumber Co., and O. G. Scheig, have formed the Used Motor Trux Co., in Minneapolis, Minn., and have located at 220 3rd street south; besides dealing in used trucks the company will store and rent commercial cars.

P. O. Oswald, formerly of Hanlontown, Iowa, and B. S. Bergie, formerly of Joice, Iowa, have taken over Nelson & Son's garage in Forest City, in the same State; the new comers will handle Reo and Chalmers cars, Bergie having been a Reo dealer before the transaction.

M. H. Davis, who recently resigned from the La Crosse Implement Co., of Minneapolis, because of ill health, has decided to reenter business; he will form the La Crosse Auto Co. and will handle Imperial cars. Davis was connected with the implement company for thirty years.

The Safety Starter Co. has been formed in Des Moines, Iowa, by J. W. Hunter, manager of The Road Maker, and Donald Hunter, formerly editor of the Spencer (Iowa) Herald; the company will act as Iowa distributer of the Sandbo mechanical engine starter, designed for use on Ford cars.

The Lebanon (Tenn.) Motor Car Co. has been sold by H. C. Foutch to ex-Mayor J. T. Odun; Kieffer Odun, the buyer's son, will manage the business. Foutch did not sell his stock of cars, however, and will maintain a livery service in a garage on Depot street, formerly occupied by the E. E. Adams Motor Car Co.

The Standard Harness Co., of Milwaukee, Wis., which several years ago engaged in the tire and supply business to compensate for a waning harness trade, has changed its name to Standard-Racine Rubber Co. It is a distributer of the Racine Rubber Co.'s products. John Jirachek and John C. Zeman are the principal owners.

Milton A. Kent, owner of the first garage in Kenosha, Wis., has sold his business to Charles E. Turnock, of that city; the business includes the Rambler agency. Until January 1, Kent, who is chairman of the road committee of the Kenosha Automobile Club, will devote himself to good roads, $100,000 having been appropriated for Kenosha county.

Connell & McKone, dealers. the Boston Batavia Rubber Co. and the Schebler Car-

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buretter Co. are about to take possession of a new three-story brick building which is being erected in Boston, Mass., on Massachusetts avenue, near Boylston street; Connell & McKone, who handle Overland cars, will have the entire ground floor, with a 30-foot front and a depth of 92 feet.

F. A. Tuschen has sold the Boulevard Garage, at 266-70 27th street, Milwaukee, Wis., to W. H. Kreuger, who will operate it; Tuschen, who also owns a garage in Watertown, Wis., has engaged in the manufacture of accessories. With A. G. Scheuerell, of Sun Prairie, Wis., he has purchased the properties of the defunct Yale Motor Equipment Co., of Oostburg, in the same State.

Smith Bros., of Los Angeles, Cal., for several years located at 742 South Olive street, have taken possession of a new building at 1616 South Figueroa street; they handle Peerless cars and trucks and Ohio electrics. C. R. Teaboldt will have charge of pleasure car sales, W. F. Wood, formerly with H. O. Harrison, will manage the truck department, and Guy Pierce will supervise the electric division of the business.

The Probey-Haynes Motor Car Co. has entered the trade in Washington, D. C., with headquarters at 1230 Wisconsin avenue northwest; it will handle Haynes cars. T. Oliver Probey, president of the company, has been engaged in the trade for some time and was chairman of the last Washington Automobile Show Committee; W. D. Arrison is associated with Probey in the new business as sales manager. The company will incorporate for $10,000.

The Payne Motor Co. has been formed in Des Moines, Ia., to act as Central Iowa distributer of Paige and Lozier cars; it was formed by Dr. C. W. Payne, formerly of Boone, Ia., and who formed and has operated the Boone Auto Co., which now becomes a sub-dealer under the Payne company. R. O. Gresham, formerly sales manager for the Warren Motor Car Co., of Detroit, will act as Payne's sales manager. The company has secured a location at 1012-14 West Locust street.

Fred Larson and William Struble, comprising the implement firm of Larson & Struble, and C. C. Sheakley, W. J. Kennedy and Matthew Kennedy, comprising the department store company of Sheakley & Kennedy Bros., all of New Hampton, Ia., have combined in a new company; the new organization will handle both implements and automobiles. Another similar business recently organized in New Hampton is the New Hampton Motor & Implement Co., with a capitalization of $40,000; the incorporators are: W. G. Shaffer, W. N. Wesp, C. W. Schnurr, A. H. Shaffer and T. K. Young.

ELECTRICS ASSUME GREATER PLACE IN ELECTRICAL SHOW

Electric Vehicle Association Takes Hand in Management — Model Garage and Repair Shop to be Featured.

That the New York electrical show, which this year will occupy Grand Central Palace from October 15th to 25th, will be more than ever an electrical vehicle show is indicated not only by the fact that Electrical Exposition and Motor Show has been selected as the official designation of the enterprise, but by the fact that a committee of the New York Electrical Vehicle Association has been appointed to take charge of the automobile section. The committee is composed of E. W. Curtis of the General Vehicle Co., J. H. Cafferty of the General Motor Truck Co., Nathaniel Pratt of the Baker Vehicle Co., S. W. Menefee of the Anderson Electric Car Co., C. Y. Kensworthy of the Rauch & Lang Carriage Co., Charles A. Ward of Ward Motor Vehicle Co., W. R. Chandler of the Holt-Chandler Co., W. C. Poertner of the Poertner Motor Car Co., J. M. Barrett of the Automatic Transportation Co., Harvey Robinson of the New York Edison Co., and H. C. Fling of the New York Electric Vehicle Association.

In addition to the display of electric vehicles, the show will include several exhibits of an instructive nature, chief of which will be a model garage for the storage and maintenance of electrics. The garage will be erected on the third floor and will be conducted in conjunction with the automobile track.

The structure will be equipped exactly as a city garage should be equipped. An electric display sign and a danger sign will be erected in front and vacuum cleaners, polishing motors, electric tire pumps and patented car washing devices will be maintained within. Visitors at the show will have an opportunity to see all of these up-to-date contrivances in action, for the garage will be the storeroom for exhibitors' cars used for demonstration purposes on the automobile track. An effort is being made to have each company detail a corps of men for demonstration work; but the Electric Vehicle Association itself has arranged to have a special staff of demonstrators on the floor.

Connected with the garage will be a model repair shop and a model battery room. The shop will be equipped with an exhibition of lathes, presses, drills and all sorts of electrical appliances for use in automobile repair work, supplied by the United States Electric Co. The battery room will be furnished with complete sets of batteries loaned by the Philadelphia Storage Battery Co., the Electrical Storage Battery Co., the Gould Storage Battery Co. and the Edison Storage Battery Co.

Aside from the space occupied by the garage and a special parking space for exhibitors' cars, most of the third floor of Grand Central Palace will be occupied by the automobile demonstration track. The course will cover 100 yards in the shape of an oval, surrounded by heavy guard rails.

Demonstrations will be conductetd on the track, and sometime during show week a gymkana will be held in which pleasure cars will participate.

White Plains Dealer Killed in Wreck.

William Gidley, a tire dealer at 22 South Arlington avenue, White Plains, N. Y., was almost instantly killed Tuesday, 2nd inst., when the car in which he and John Pye, a chauffeur, were riding left the roadway, collided with an iron electric light pole and capsized in New York City at Broadway and West 215th street; the two men had been to New York to purchase tires and Prest-O-Lite tanks, and the collision is said by some to have been due to the fact that the men were disputing for the possession of the steering wheel while traveling 40 miles an hour and by others to the inexperience of the driver. Gidley was pinned under the car and he was dead when released. Pye is in a critical condition.

Dealer Forms $250,000 Corporation.

The Motor Car Distributors Co. is the title of a $250,000 corporation which has been formed in Los Angeles, Cal., chiefly through the efforts of Fred W. Beau de Zart, who has been handling the Krebs truck in that part of the countrty. Associated with him are A. C. Labric, J. T. Bunn and Dr. C. W. Fish, all of whom are prominent in Los Angeles. The new company will not only handle the Krebs truck but also the Motokart in the territory west of the Rockies; it likewise has practically completed negotiations for the agency of two lines of pleasure cars.

Wiping "Columbia" off the Slate.

The Columbia factory in Hartford, which is one of the possessions of the Maxwell Motor Co., has been shut down and it is stated will shortly be offered for sale, which means, of course, that the Columbia car, one of the earliest and best known in the field, will be known no more. When, several months since, Motor World exclusively stated that this end was in view, it created a considerable furore in Hartford, where more or less vigorous and lengthy denials were published.

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The Motor World Publishing Company
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A. B. SWETLAND, President and General Manager
F. V. CLARK, Business Manager.

EDITORIAL DEPARTMENT
R. G. BETTS, Managing Editor
S. P. McMINN HOWARD GREENE
R. W. SHERMAN

ADVERTISING DEPARTMENT
BROCK MATHEWSON, Manager
New York Office
1600 Broadway
HOWARD L. SPOHN LOUIS R. SMITH O. H. ADAMS

Western Office
1001 Ford Bldg., Detroit, Mich.
W. H. TRIPP, Mgr.

Detroit
1001 Ford Bldg.
MAXTON R. DAVIES

Cleveland
610 Superior Ave. East
C. H. HANDERSON

Chicago
Room 510 Harvester Building
606 South Michigan Avenue
H. A. WILLIAMS

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CHANGE FOR THE SAKE OF CHANGE.

Whether car makers, or any considerable number of them, are now making changes for the mere sake of change is a pretty question. Few, if any, of them would plead guilty to the impeachment but, despite the fact, there are not a few of those identified with the industry who vigorously maintain that such is the case.

Instead of developing or perfecting productive effort which really earns the profits, many engineers are accused of flattering their fancies by devoting themselves too seriously to the task of making changes for the sake of change, often on the eve of or in the midst of the productive season.

To cite an instance of change without good reason, a lamp maker points to one of his patrons who delayed placing his order until 30 days before the lamps actually were required. It was impossible to make the dies in such a short space of time, and the effort to do so caused such a rush that there was no time to permit of road tests of the lamps As a result, trouble was experienced and buyers of cars to which the lamps were applied were quick to complain. To every complainant the lamp manufacturer promptly sent a set of new lamps of his standard pattern and invariably the satisfaction they afforded was expressed in letters of thanks, abundantly proving that the standard article is not only satisfactory to the car purchaser but that he was not influenced by the specially designed article.

The lesson of these lamps is an example of not only wasted effort but wasted money. There was no public demand for a special design and the standard article was of such a satisfactory nature that departing from it served no useful purpose. The demand rose solely in the mind of the engineer and could spring only from a striving for style or individuality, or whatever else change for the sake of change may be termed. Too often such striving means a reckless disregard of the enormous overhead cost which it entails, the real extent of which is not immediately appreciated, as the bad effects are not experienced until production is found to have been delayed, bringing with it costly unhappiness.

Thus the dealer who may have ordered and expected to sell 100 cars, and laid his plans and expenses accordingly, actually receives but 40 or 50 cars. The money lost can never be regained and the loss falls all along the line, even the accessory manufacturer not escaping the bad effects.

There are indications that in many instances change for the sake of change is adroitly masked by the term "refinement of detail," and that enormous losses have grown therefrom. But whether or no indications err, the subject is one that merits the most thoughtful consideration.

At this stage, it would seem that "Hold fast to that which is good" is a proverb which should be tacked up for the daily scrutiny of engineers, fickle and otherwise, who are prone to be swayed by passing breezes or to gild the lily in the belief that it is improved thereby.

SALTING THE STANDARD OIL STORIES.

Whenever it is desired to attract notice, one sure way is to shout or print the name Standard Oil. That corporation has committed its full share of commercial offenses but the number of sins committed in its name or by use of its name is beyond reckoning. It has been used both to boost and to embarrass men and movements, commercial and otherwise, and the fact is so well known to observant and well informed persons that the mere linking of Standard Oil with any enterprise causes them to smile and reach for the salt celler.

This is true of the yarn bearing the heading "Standard Oil May Enter Automobile Industry," which during the past week has been going the rounds of the daily press and which recites that Standard Oil interests are planning to acquire and merge "three of the largest automobile factories in this country" and to sell their popular priced productions "without agents and with little advertising."

It isn't the first time that Standard Oil has been reported to be making ready to "enter the automobile industry" and the reports would pass as amusing if they were not swallowed whole by even some fairly intelligent men in the industry itself. Undoubtedly Standard Oil stockholders, like other men of means, have invested in automobile shares, but their investments are purely personal. The business of the Standard Oil Co. is the production of oil and it is just as likely to enter the automobile industry as the automobile industry is likely to engage in the production of oil—no more, no less.

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APPALLING TRAGEDY CAUSED BY NASHVILLE PICKANINNY

Four Meet Death When Race Driver Tries to Avoid Hitting Lad Who Strayed Onto Track—Sudden End to 25-Mile Event.

Those who saw the Labor Day automobile races that were run on a one-mile dirt track in Nashville, Tenn., are not likely to forget them for some time to come, for the piece de resistance of the meet—a 25-mile free-for-all event—resulted in one of the saddest and most spectacular accidents that has occurred in some time in connection with automobile racing. No fewer than four persons, all of them participants in the race, were killed and three others were badly maimed, and all because of a little negro boy who eluded the vigilance of the guards and wandered out onto the track in front of the flying cars. Strangely enough, the cause of the accident escaped unhurt.

The accident which piled three cars together a mass of tangled wreckage and sent another through the fence, occurred in the backstretch of the track directly in view of the crowded grandstand. A local racing driver named Cylde Donovan was leading at the time of the accident in a Studebaker, and in an effort to avoid hitting the little colored boy swerved his car so quickly that one of his axles gave way under the strain and precipitated the car with its occupants through the fence and back again onto the track. Jake Loiver, who, at the wheel of a Mercer, was following Donovan, managed to steer clear of the wreck, but the next car, a Stutz driven by William Sherrod, plunged into it. Almost instantly afterward, John W. Sherrill, at the wheel of a Buick, also crashed into the wreck. The fourth car figuring in the wreck was a Mercer driven by Ed Polk, and to avoid hitting the debris of the three cars Polk put his car through the fence.

Donovan, who was the sole occupant of the Studebaker, escaped with painful injuries, as did Polk and his mechanician, Freeman Armsby. Both driver Sherrill and mechanician Thomas F. Bridges were killed outright and driver Sherrod and his mechanician, "Gooch" Brown, died in the hospital later as a result of their injuries. When Polk sent his car through the fence to avoid hitting the other cars, a number of spectators were scattered and thrown down, but none of them was hurt beyond a few bruises. At the time of the accident Polk, whose car bore the ominous number 13, was on the fifth lap of the track and was leading by about 200 yards.

Previous to the accident, two shorter races were run, a five mile even going to Brown (Stutz) and a 10-mile event to Frank Bell in an Apperson. The summaries:

Five mile free-for-all—Won by "Gooch" Brown, Stutz; second, Donovan, Studebaker; third, Polk, Mercer. Time, 5:26.

Ten miles—Won by Frank Bell, Apperson; second, Donovan, Studebaker; third, Polk, Mercer. Time, 11:33.

Twenty-five mile free-for-all—Stopped at end of sixth lap; Donovan leading.

Tradesmen Disciplined by A. A. A.

For violating the A. A. A. rule governing the advertising of stock cars, discipline was meted out to one car manufacturer and four dealers by the contest board last week. The manufacturer affected is the Nyberg Automobile Works, of Anderson, Ind. The dealers are the Gwinn Sales Co., Lozier agent in Columbus, Ohio; G. L. Sitgreaves, Mercer agent in the same place, and Mercer Auto & Supply Co., Mercer agent in Cleveland, all of whom advertised victories of so-called "stock" cars. In the case of the Mercer agent in Cleveland, the advertising took the form of a sign in the show window.

The fourth dealer who was disciplined is K. C. Pardee, the Briggs-Detroiter agent in New York City, who in his show window displayed a sign stating that the Briggs-Detroiter had "Won first prize in the Catskill economy and reliability run," which assertion was not in accord with the official records. Pardee, therefore, was suspended until September 1, 1914.

To Disclose Route of Lincoln Way.

Just where the Lincoln Way, that Middle West-Pacific Coast road, is going to lie will be known Sunday, 14th inst., when the promoters of the proposition will give full publicity to their plans; Henry B. Joy, head of the Packard Motor Car Co. and also of the Lincoln Highway Association, has issued a request that all those who are on or off the route decorate their places of business on that day with Lincoln Way banners, Lincoln portraits, American flags, bunting and poster copies of the proclamation concerning the project. Poster copies of the proclamation will be furnished upon request by Joy and his associates.

Two Michigan Tours Rolled into One.

To avoid the possibility of confusion which might have resulted because of the running of the Elgin road races, the reliability contest which was to have been started August 30 by the Chicago Motor Club was abandoned, or, rather, it was virtually consolidated with the same organization's Around Lake Michigan tour, which is to start from the Windy City on September 8th and continue till the 13th.



*Indicates Sanction by A. A. A.

Aug. 30-Sept. 6, Chicago, Ill.—Reliability tour of the Chicago Motor Club.

Sept. 1-5, Houston, Tex.—Houston Automobile Club's Grade III reliability contest.

Sept. 6, Hamline, Minn.—Minnesota State Fair Association's track racemeet.

Sept. 8-13, Chicago, Ill.—Chicago Motor Club's Around Lake Michigan reliability tour.*

Sept. 9, Corona, Cal.—Speedway track races, under auspices of Corona Automobile Association.

Sept. 12, Canfield, Ohio—Canfield Fair Association's track racemeet.

Sept. 13, Covington, Ky.—Cincinnati Automobile Club's track racemeet.*

Sept. 13, Grand Rapids, Mich.—Grand Rapids Automobile Club's track racemeet.

Sept. 14, Seattle, Wash.—Kings County Fair Association's track racemeet.

Sept. 18, Asheville, N. C.—Asheville Automobile Club's hill climb.

Sept. 20-21, Detroit, Mich.—Track racemeet under auspices of Michigan State Fair.

Sept. 27, White Plains, N. Y.—Track racemeet under auspices of Geo. T. Long.

Sept. 27-28, Bakersfield, Cal.—Kern County Fair Association's track racemeet.*

Oct. 3, Trenton, N. J.—Inter-State Fair Association's track racemeet.

Oct. 3-4, Oklahoma City, Okla.—Oklahoma State Fair Association's track racemeet.

Oct. 10-17, Paris, France—Annual automobile salon.

Nov. 2-3, Los Angeles, Cal.—Los Angeles to San Diego to Phoenix road race.

Nov. 4-5, El Paso, Tex.—El Paso Automobile Club's road race between El Paso and Phoenix, Ariz.

Nov. 6, Phoenix, Ariz.—Track racemeet under auspices of State Fair Association.

Nov. 24, Savannah, Ga.—Vanderbilt Cup road race under auspices of the Savannah Automobile Club.*

Nov. 27, Savannah, Ga.—Grand Prize road race under the auspices of the Savannah Automobile club.*

Jan. 3-10, New York City—Automobile Chamber of Commerce's national automobile show in Grand Central Palace.

Jan. 24-31, Chicago, Ill.—Automobile Chamber of Commerce's national automobile show in the Coliseum and First Regiment Armory.

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FIRE CHIEFS INSPECT FIRE APPARATUS IN PALACE SHOW

Motor-Driven Vehicles Entirely Displace Horse-Drawn at Convention Exhibit in New York—Makers and What They Display.

Just at present there are nearly all the ingredients of a whaling big fire in Grand Central Palace, which, as everyone knows, is in New York City; flame is about the only thing that is missing, and even that is not missing if moving picture flames can be made to answer for the real thing. There is smoke—tobacco smoke, be it added, though it still is smoke—and a really tremendous amount of motor propelled fire apparatus, and such a clanging of multifarious gongs as would warm the cockles of any fireman's heart. All of which is due to the fact that the Forty-first Annual Convention and Fire Exposition of the International Association of Fire Engineers — to give it its full title—is in full sway and will remain in full sway until Saturday night, 6th inst. It was officially opened on Monday and since then the thousand-odd fire chiefs who have come from all over the United States to attend have inspected motor fire apparatus and fires and everything that pertains to fires, to say nothing of a couple of fires.

As it is at present, the two floors of Grand Central Palace that are given over to an exhibition of modern fire apparatus look for all the world like a "sure enough" automobile exhibition, for, with the exception of a single hose reel designed to be drawn by the firemen themselves, there is not a wheeled vehicle but what is propelled by gasolene. Altogether, the apparatus makes a very brave showing, and even though there is not a great deal that really can be styled new, progress nevertheless is apparent in the apparatus on view and there is much to attract and to hold the attention, quite outside of a liberal assortment of fountain pens, souvenirs, microscopes, and vacuum clothes washers, all more or less foreign to fire and fire engines.

The American-La France Fire Engine Co. is there, of course, as are all the other large companies that made a specialty of fire apparatus, though the American-La France company undoubtedly has the biggest display of all. In all there are no less than four great hook and laddder trucks—"hookses," as the schoolboys call them—to say nothing of several combination chemical and hose wagons driven by great gasolene engines. One of the really interesting vehicles is a tractor-drawn hook and ladder exhibited by the International Motor Co. of New York City. The coupling between the tractor, which carries the Mack nameplate, and the hook and ladder part, is in the form of a great ball and socket joint. Obviously, it permits almost any amount of motion between the two parts of the vehicle without harming either or reducing its efficiency.

Packard and Pope-Hartford fire apparatus, in both cases of the combined hose and chemical type, are side by side at the entrance and further down the spacious hall loom the Seagreave vehicles, the peculiar looking Martin tractors, the giant Christie front drive converted "steamer" and the Ahrens-Fox engines. The Ahrens-Fox exhibit, by the way, has the distinction of including probably the largest of all the pieces of fire apparatus, barring the hook and ladder vehicles, of course. Outside of the size of the engine, it is distinctive by reason of the fact that the pump is out in front ahead of the radiator.

Omitting only those exhibitors not closely allied with the automobile industry, the list of those who occupy exhibition spaces is as follows: International Motor Co.; Sheldon Axle Co.; Knox Automobile Co.; Seagreave Co.; Pope Mfg. Co.; Nott Fire Engine Co.; James Boyd & Bro.; American-La France Fire Engine Co.; Martin Tractor Co.; Timken Axle Co.; Ahrens-Fox Co.; Front Drive Motor Co.; S. F. Bowser & Co.; Republic Rubber Co.; B. F. Goodrich Co.; Sewell Wheel Co.

In the program that has been laid down for the visiting fire chiefs there is much of amusement and entertainment, and that there is much of work, too, or something that closely approaches to work is revealed by the list of papers that has been prepared for presentation at the business sessions of the International Asssociation. The complete list is as follows:

"Motor Apparatus; Its Durability, Efficiency and Economy of Operation," Chief A. V. Bennett, Birmingham, Ala.; "Fire Insurance and its Relation to Incendiarism," Fire Commissioner Joseph Johnson, New York; Chief John Kenlon, New York; Mr. Frank Lock, manager Atlas Insurance Co., Ltd., New York; "British Motor Fire Engines," Arthur Reginald Dyer, assistant chief fire brigade, London, Eng.; "Fire Prevention and Uniform State Fire Marshal Laws," Thos. J. Ahearn, State Fire Marshal, Albany, N. Y.; "The Gasolene Motor Pumping Engine; Its Defects and Cost of Operation and Maintenance," Chas. S. Demarest, chief of construction, Fire Department, New York; "Inspection of Buildings and contents by Uniformed Members of Fire Departments," Chief H. C. Bunker, Cincinnati, Ohio; Com. W. N. Cash, Cincinnati, Ohio; "The Two Platoon," Chief F. L. Stetson, Seattle, Wash.; Chief John C. Enger, Kansas City, Mo.; Chief Chas. A. Slater, Omaha, Neb.

New Owners Save Oostburg's Industry.

At the sale of the assets of the bankrupt Yale Motor Equipment Co., of Oostburg, Wis., the buildings, equipment and patent rights were bid in by F. A. Tuschen, of Milwaukee, and A. G. Scheurell, of Sun Prairie, Wis. They paid $17,275 for the property and will continue the business. In addition to a muffler, which was the principal Yale production, the new owners, however, will produce horns, cut-outs and other accessories. Tuschen is well known in the automobile industry, being the owner of garages in Milwaukee and Watertown and having the State agency for the Nyberg car.

Case Includes Weeds in Equipment.

Marking an innovation in equipment, the J. I. Case T. M. Co. has added Weed tire chains as standard equipment on its 1914 cars; it is the first manufacturer of gasolene cars to include chains in its list of extras. Borland-Grannis electrics are so equipped at the factory and the Cole distributers in New York City furnish them, but the equipment is not according to Cole factory specifications. The Borland-Grannis list of equipment includes "chains" without the Weed name, but Weeds are used.

Zenith Carburetter Takes More Room.

The Zenith Carburetter Co., of Detroit, has leased what was previously the Armstrong woolen plant, on Vanda avenue in that city, of which it already has taken possession. The new location will provide much-needed "elbow room" and permit of a largely increased production.

One Morgan & Wright Addition Finished.

Morgan & Wright are taking possession of their immense new plant which recently was completed in Detroit and which will provide 400,000 square feet of additional floor space. A duplicate of the new building will be ready for occupancy about April 1st next.

Monarch Secures Factory in Detroit.

The Monarch Motor Car Co., of Detroit, has leased space in the former Carhartt automobile factory, on Jefferson avenue, and will now proceed to the production of its $1,000 car in real earnest. R. C. Hupp is president of the company.

Sternberg Doubling its Truck Plant.

The Sternberg Mfg. Co., which manufactures the truck of that name, is erecting an addition to its plant in Milwaukee which will double its capacity. The new structure will be a brick building, 150 feet square.

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TRAINING SALESMEN PROPERLY

Results Which May be Obtained by Skilful Management—How One Manager "Spoiled" an Employe of the Greatest Promise.

How do you train your salesmen? Do you train them at all? Do you watch over them carefully to see that they are spending their time to the greatest advantage of the firm? Do you aim to help them develop the best that is in themselves, realizing that the more valuable they are to themselves the more valuable they are to you?

Good salesmen are precious; they need and deserve care—the kind of care that husbands their resources and helps them work to the greatest advantage—not the everlasting stir-up brand that makes them dissatisfied—and not the too generous kind that results in putting the salesman out of business.

Manager Spoiled Promising Salesman.

"That fellow over there was the greatest salesman I ever had," remarked a sales manager, pointing to a man who stood a few feet away, "but I spoiled him. I did not know it then, but I know it now. He was in another line of business. One day he came to me and said he was going into the automobile business. Would I give him a chance? I agreed, and thought no more about it. One day he called me up and said he was coming to work. I told him he was foolish to throw up a sure thing, but he said he was tired of it and he was going to learn to sell cars. 'But you won't be worth anything to me for four or five months,' I replied. He told me that if he could earn enough to pay his board he would be satisfied. To make a long story short, he came and I put him at work in the factory. He applied himself till he knew all about the cars—and the only time I saw him was when he came in at night and asked for some of our advertising matter. He devoured it eagerly. In three months' time he was in the testing department.

"The boys in the testing department knew he was different from their kind. They tried every sort of dodge that the ingenuity of a mechanic can invent to get him into trouble. They would flood the carburetter; stuff up the feed pipes; change the timing of the valves; short-circuit the magneto, and do a hundred other annoying things, but he always took it good naturedly and always located the trouble.

Learned Amazingly in Six Months.

"In six months he knew more about our stuff than fellows who had been with us three years. By this time I thought I would try him out on the road. I sent him to New Orleans, where we had never sold anything. He brought back an order for 16 cars. Then I shot him all over the country, hitting the high spots. He had a wonderful faculty for remembering names and faces, and he got the business.

"Once we were very anxious to land a big order in the West. I brought this man on, and I'll be hanged if he didn't close it! I was feeling so good over it that I called him in and said, 'Fred, here's $100; take it and spend it and make a good fellow of yourself with these people. You need not make any accounting of it. Go to it!' He did so, and that was his finish. He was no good after that. A short time afterwards I had to let him go. He simply was all in. I blamed myself more than I can tell you. I have never made such a fool of myself since—and I never will. That was four years ago, and Fred has never amounted to anything since. And he was the most wonderful salesman I ever had. It was an expensive lesson for both of us."

There is little doubt that the handling of salesmen calls for all the skill, diplomacy and judgment at the command of the sales manager, whether it be in a manufacturing business or a retail store. It pays to know your men through and through—and it pays to train them soundly.

SMALL LEAKS WHICH MAY CARRY AWAY SNUG PROFITS

The selling end of the business is rightly regarded as of the utmost importance because unless the cars are sold there will be no business. But the selling end cannot have all the attention and other departments be neglected without somebody going "in the hole."

Too many dealers give every ounce of attention to the sales and neglect the financial end. The results can always be predicted. A business must be properly financed and carefully financed if it is going to win. Leaks and losses must be found before they can be stopped. That means a thorough and reliable system of accounting—and a regular checking up by the head of the business.

How is your checkbook? Is it up to date? Does your cash check up with *your* cash book? There may be no intentional dishonesty; mistakes will occur. It is only fair to your employes and yourself that you should personally know that everything is right.

In this connection it pays to know whether or not your bills go out regularly; do you ever watch to see? Is everything billed each week? How long could a charge be held up without your knowing it? Are your books posted up? These are details—but every important ones. Many a business has been lost because the owner did not check up such details.

What does the 100 per cent. efficiency mark for the measurement of your sales force include?

Did you ever lay down the scale—get it on paper—and then proceed to measure up?

It's not a new idea, but it is a practical one and worth using.

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SALESROOM—NOT STOREROOM

Thought and Study to Arrangement of Floor Worth Many Times the Effort —Dealer Who Let Valuable Space go to Waste.

There is in Buffalo an automobile dealer whose salesroom is a striking example of how to produce an unpleasing, cluttered-up, confusing effect in the mind of a prospective customer.

The exterior of the store is excellent. The show windows are large and clean, and the lettering on them is clear and well defined without in any way obscuring the view of the interior. The entrance is in the center. You step into a high-ceiled, well-proportioned room, and instantly you are struck with the discordant arrangement of the cars on the floor. Your immediate impression is that you have accidentally stumbled into a storeroom—not a salesroom. There are several big, high-priced touring cars jostling with used cars, medium-priced cars, small cars and heavy trucks. Next to an up-to-the-minute $5,000 masterpiece is a used car of antique vintage. Next to that a truck. Next to that is a $2,000 machine whose merit deserves better recognition than a tight squeeze between a truck and a used car.

Results Few Hours' Work Could Bring.

The whole effect is of the sort that sets teeth on edge and makes one wonder why such an important detail of a big business should apparently have such little consideration.

A few hours' work would completely transform that interior. The completeness of the lines could be emphasized and the effect made alluring and attractive. All that is necessary is orderly arrangement, thoughtful classification, intelligent planning.

The large, handsome touring cars should be grouped together in a manner to emphasize their exclusiveness; the medium-priced new cars marshalled where they would not come into conflict with either used cars or trucks; the used cars placed where the contrast with new cars would not be too evident.

Salesroom display is simply appealing to the mind through the eye, and it is worthy of all the time and study you can put on it.

WHEN "TOO BUSY TO READ" MAY BRING ACUTE EMBARRASSMENT

"Hello! Hello! Is this Motor World? . . . Say, what can you tell me about the Palmer car?"

Yes, he was a dealer—and a subscriber to Motor World. His friends say he is a live one—energetic, aggressive, business-like. Yet he admitted that for three weeks or more he had not looked at a paper.

He was told to turn to pages of a certain issue and he would find the Palmer car described in detail. It was just what he wanted. How embarrassing, however, to explain to the waiting prospect who asked him about this car, that he had never heard of it. Then to find it had been covered in detail weeks before by his favorite paper—that he had not read.

The wise business-man of to-day reads his trade paper carefully. He knows that some one idea picked up may mean the difference between profit and loss. He is keen to get all the matter between the covers thoroughly digested and he knows that it takes only about an hour a week to keep posted up-to-date. No man is too busy to keep informed on his own business.

ADVANTAGES OF FILING SYSTEMS KEPT UP TO DATE

A good filing system is indispensable. No matter how fine your showroom or how good your repair shop, there is something lacking—if your letters and bills and other papers are not always filed up to date. It is bad business indeed to have no file at all, but it is almost as bad to have a filing system and then have the letters accumulate for three or four months before filing.

The convenience of a filing system is the immediate accessibility of the records. It is not to bury things in, as some people think, but to make them get-at-able. A critical situation may be saved by the ability to turn at once to all the correspondence on the matter. Aside from this, no business can succeed without proper and adequate records. Have a good filing system—and then keep it up to date.

THE TYPE OF DEALER WHO KNOWS NO "BETWEEN SEASONS"

There is no "between seasons" for the dealer who is right on the job. He winds up one season one day and steps right into the next season without having any distinct line of demarcation between the two. He is selling just as hard and just as eagerly as he knows how. He does not sag, nor feel blue nor pessimistic; he has no time for that sore of thing; he has prospects to see and sales to close.

This sort of dealer is "on his toes" all the time. He keeps himself physically clean and trim and thus he is always fit. It means sacrifice, denials, grim perseverance, but he finds that it pays—and pays well. That is what he is in business for—and the keener and more strenuous the fight, the quicker he will reach the goal he is aiming it.

The older one grows in business the more he realizes that it is the little things that count. We get so used to dust on show windows and fly-specks on the signs that they seem like "regular euipment." Isn't that the best reason in the world why we should all aim at immaculate windows, at dustless cars—at well-managed, well-kept-up show rooms?

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S. A. E. CODIFIES STORAGE BATTERY DATA AND RULES

Puts Instructions into Concise and Systematized Form—Designed to Render Easier the Handling of Lighting and Starting.

In going into the question of standardizing instructions for the proper care of storage batteries such as commonly are used in electric lighting and engine starting systems, the Society of Automobile Engineers has not been content with any halfway measures, and in the complete data which now has been made public, though the report of the committee that had the work in hand was accepted at the Summer Meeting in June, it is very plain that no pains have been spared to cover the question very thoroughly.

The data is entitled "Specifications for the Installation and Care of Storage Batteries Used in Connection with Electric Starting and Lighting Systems on Automobiles," and in it particular stress is laid upon the necessity for proper installation in the first place with due regard for accessibility. Otherwise the instructions are complete down to the last minute detail. The report in full is as follows:

Proper Installation First Caution.

1. Batteries must be properly installed. Keep battery securely fastened in place. Battery must be accessible to facilitate regular adding of water to, and occasional testing of, solution. Battery compartment must be ventilated and drained, must keep out water, oil and dirt, and must not afford opportunity for anything to be laid on top of battery. Battery should have free air space on all sides, should rest on cleats rather than on a solid bottom and holding devices should grip case or case handles. A cover, cleat or bar pressing down on the cells or terminals must not be used.

2. Keep battery and interior of battery compartment wiped clean and dry. Do not permit an open flame near the battery. Keep all small articles, especially of metal, out of and away from the battery. Keep terminals and connections coated with vaseline or grease. If solution has slopped or spilled, wipe off with waste wet with ammonia water.

3. Pure water must be added to all cells regularly and at sufficiently frequent intervals to keep the solution at the proper height. The proper height for the solution is usually given on the instruction- or name-plate on the battery. In all cases the solution must cover the battery plates. The frequency with which water must be added depends largely upon the battery, the system with which it is used and the condition of operation. Once every two weeks is recommended as good practice in cool weather; once every week in hot weather. Plugs must be removed to add water; then replaced and screwed home after filling. Do not use acid or electrolyte, only pure water. Do not use any water known to contain even small quantities of salts of any kind. Distilled water, melted artificial ice or fresh rain water are recommended. Use only a clean non-metallic vessel. Add water regularly, although the battery may seem to work all right without it.

Density Test to Learn Condition.

4. The best way to ascertain the condition of the battery is to test the specific gravity (density) of the solution in each cell with a hydrometer. This should be done regularly. A convenient time is when adding water, but the reading should be taken before, rather than after, adding the water. A reliable specific gravity test cannot be made after adding water and before it has been mixed by charging the battery or by running the car. To take a reading insert the end of the rubber tube of the ordinary hydrometer in the cell. Squeeze and then slowly release the rubber bulb, drawing up electrolyte from the cell until the hydrometer floats. The reading on the graduated stem of the hydrometer at the point where it emerges from the solution is the specific gravity of the electrolyte. After testing, the electrolyte must always be returned to the cell from which it was drawn. The gravity reading is expressed in "points," thus the difference between 1.250 and 1,275 is 25 points.

5. When all cells are in good order the gravity will test about the same (within 25 points) in all. Gravity above 1,200 indicates battery more than half charged. Gravity below 1,200 but above 1,150 indicates battery less than half charged. When battery is found to be half discharged use lamps sparingly until by charging the battery the gravity is restored to at least 1,200. See Section 8. Gravity below 1,150 indicates battery completely discharged or "run down." A run-down battery should be given a full charge at once. See Sections 7 and 8. A run-down battery is always the result of lack of charge or waste of current. If, after having been fully charged, the battery soon runs down again there is trouble somewhere else in the system, which should be located and corrected. Putting acid or electrolyte into the cells to bring up specific gravity can do no good and may do great harm. Acid or electrolyte should never be put into the battery except by an experienced battery man.

6. Gravity in one cell markedly lower than in any of the others, especially if successive readings show the difference to be increasing, indicates that the cell is not in good order. If the cell also regularly requires more water than the others, a leaky jar is indicated. Even a slow leak will rob a cell of all of its electrolyte in time, and a leaky jar should be immediately replaced with a good one. If there is no leak and if the gravity is, or becomes, 50 to 75 points below that in the other cells, a partial short-circuit or other trouble within the cell is indicated. A partial short-circuit may if neglected seriously injure the battery and should receive the prompt attention of a good battery repair man.

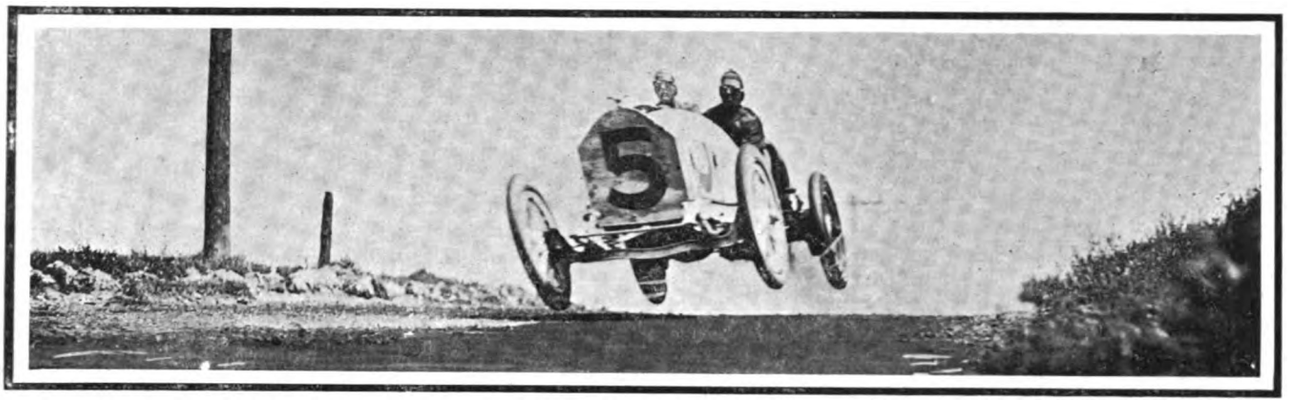
7. A battery charge is complete when, with charging current flowing at the rate given on the instruction-plate on the battery, all cells are gassing (bubbling) freely and evenly and the gravity of all cells has shown no further rise during one hour. The gravity of the solution in cells fully charged as above is 1,275 to 1,300.

Charge Well But Do Not Overcharge.

8. The best results both in starting and in lighting service will be obtained when the system is so designed and adjusted that the battery is normally kept well charged but without excessive overcharging. If, for any reason, an extra charge to maximum specific gravity is needed, it may be accomplished by running the engine idle, or by using direct current from an outside source. In charging from an outside source use direct current only. Limit the current to the proper rate in amperes by connecting a suitable resistance in series with the battery. Incandescent lamps are convenient for this purpose. Connect the positive batttery terminal (painted red, or marked POS or P or X) to the positive charging wire and negative to negative. If reversed, serious injury may result. Test charging wires for positive and negative with a voltmeter or by dipping the ends in glass of water containing a few drops of electrolyte, when bubbles will form on the negative wire.

9. A battery which is to stand idle should first be fully charged. See Sections 7 and 8. A battery not in active service may be kept in condition for use by giving it a freshening charge at least once every two months, but should preferably also be given a thorough charge, after an idle period, before it is replaced in service. A battery which has stood idle for more than two months should be charged at one-half normal rate to maximum gravity before being replaced in service. It is not wise to permit a battery to stand for more than six months without charging. Disconnect the leads from a battery that is not in service so that it may not lose through any leak in car wiring.

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ANDERSON LITERALLY "IN THE AIR" AND BOUNDING TO VICTORY IN THE "BIG" RACE

ELGIN NATIONAL PROVES EASY FOR ANDERSON

Stutz Pilot Takes Lead in Fourth Round and Holds it to the End, Finishing In Record Time—Chicago Trophy Goes to De Palma With Dawson in a Deltal Second—Course in Slippery Condition.

Ralph DePalma, the smiling Italian New Yorker, did not quite duplicate his double win of last year in the Elgin road races, though he came pretty near to it on Friday and Saturday last at the wheel of a wire-wheeled Mercer on the Illinois course; actually, he half duplicated the feat, and even though he did only carry away the Chicago Automobile Club's trophy that was competed for on Friday and was restricted to cars having less than 300 inches piston displacement, his performance was proof enough that he really has shaken off the jinx which pursued him so relentlessly not so very long ago. But the greatest honor of all belongs to Gil Anderson and his Stutz, for not only did Anderson win the "big car" race which was run on Saturday and which was for cars having up to 450 inches piston displacement, but he won it so decisively and left such a big margin of time between himself and the next man home that there never can exist any doubt regarding his right to the Elgin National trophy—and the $1,750 in cash that goes with it. He took the lead on the fourth round and never relinquished it.



ANDERSON'S WINNING SMILE

ORDER OF FINISH AND SPECIFICATIONS OF THE CARS.

UNDER 300 CUBIC INCHES.

Driver and Car.	Bore.	Stroke.	Disp.
De Palma, Mercer...	4.37	5.00	299.9
Dawson, Deltal	4.00	5.94	298.9
Chandler, Mason	3.81	5.00	229.0
Rickenbacher, Mason..	3.98	6.00	299.3
Endicott, Nyberg	3.75	5.00	220.9
Wishart, Mercer	4.37	5.00	299.9
Luttrell, Mercer	4.37	5.00	299.9
Mulford, Mason	3.98	6.00	299.3

UNDER 450 CUBIC INCHES.

Anderson, Stutz	4.81	6.00	437.2
Mulford, Mason	3.98	6.00	299.3
Wishart, Mercer.....	4.81	6.81	446.1
Grant, Isotta	4.72	6.30	440.0
De Palma, Mercer.....	4.81	6.81	446.0
Dawson, Marmon ...	4.50	7.00	445.3
Endicott, Case*	4.36	5.00	449.3
Bergdoll, Erwin	4.53	6.94	448.2
Haupt, Mason	4.31	6.00	350.9
Burman, Keeton	5.50	5.50	449.4
Henning, Velie	4.50	5.25	334.0
Rickenbacher, Mason	4.31	6.00	350.9

* Six cylinders.

The so-called minor events which last year served as curtain raisers to the two main features—the race for the Illinois Trophy, which went for 203 miles and was for cars having 301-450 inches displacement; the race for the Aurora trophy, which went for 152 miles and was for cars having 231-300 inches displacement; and the race for the Jencks trophy, which went for 101 miles and was for cars having 161-230 inches displacement—this year had no place on the program at all. The only races run were those for the Chicago Automobile Club's trophy and for the Elgin National trophy, and the distance for both was the same—namely, 36 laps, or 301 miles 4,440 feet; the course measures just 8 miles 2,030 feet to the lap.



DE PALMA TAKES ON WATER

It was to be expected, of course, that some speed, to drop into the vernacular, would be develeoped and some speed was developed. But even though the cars were driven around the circuit a good deal faster than cars ever have been driven over it before, it is likely that even the comparatively high averages that were made could have been bettered if those who had the oil sprinkling in hand had been either a little less generous or had started their operations a little sooner than they did. As it was, the course was beautifully smooth

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SUMMARY OF THE ELGIN NATIONAL TROPHY RACE WHICH WENT 302 MILES

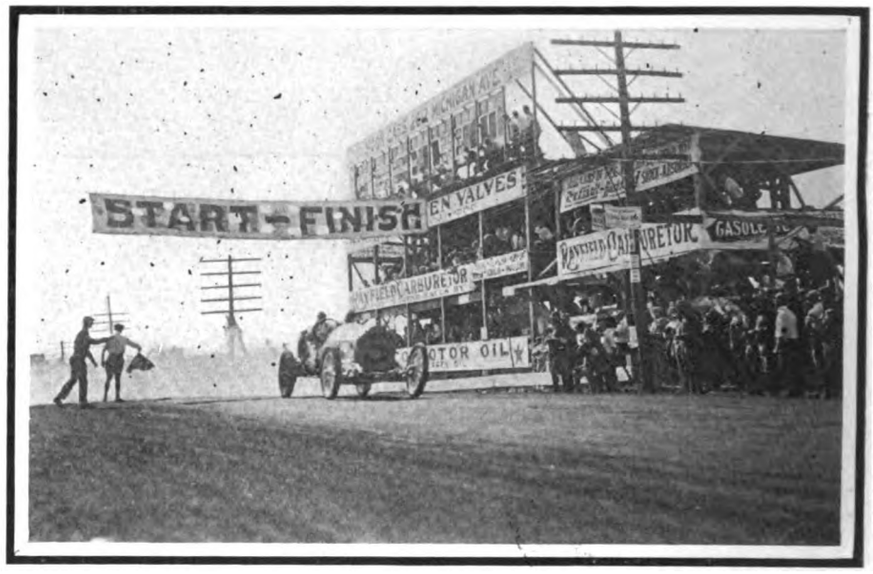
No.	Car	Driver	Entrant		1 8 Miles 2030 Ft.	2 16 Miles 4060 Ft.	3 25 Miles 810 Ft.	4 33 Miles 2840 Ft.	5 41 Miles 4870 Ft.	6 50 Miles 1620 Ft.	7 58 Miles 3650 Ft.	8 67 Miles 400 Ft.	9 75 Miles 2430 Ft.	10 83 Miles 4460 Ft.	11 92 Miles 1210 Ft.	12 100 Miles 3240 Ft.	13 108 Miles 5270 Ft.	14 117 Miles 2020 Ft.	15 125 Miles 4050 Ft.	16 134 Miles 800 Ft.
1	Case	W. Endicott	J. Alex Sloan	El. Time	7:31	14:53	22:25	30:15	38:08	45:57	53:50	61:32	69:26	77:16	85:12	92:51	100:28	108:25	116.20	124:10
				Lap Time	7:31	7:22	7:32	7:50	7:53	6:49	7:53	7:42	7:54	7:50	7:57	7:38	7:37	7:57	7:55	7:50
2	Mason	Rickenbacher	F. E. Duesenberg	El. Time	Out of race—Broken Axle.															
				Lap Time																
3	Mason	Mulford	Ralph Mulford	El. Time	7:16	14:29	21:40	28:55	36:10	43:19	50:31	57:44	64:51	71:57	79:09	86:20	93:32	100:33	107:38	114:4[illegible]
				Lap Time	7:16	7:13	7:11	7:15	7:15	7:9	7:12	7:13	7:73	7:6	7:12	7:11	7:12	7:1	7:5	7:[illegible]
4	Mercer	Wishart	Mercer Auto Co.	El. Time	6:51	13:29	20:11	29:21	36:09	44:35	51:36	58:29	65:17	72:05	78:56	85:43	92:30	99:17	106:05	114:4[illegible]
				Lap Time	6:51	6:38	6:42	9:10	6:48	8:26	7:1	6:53	6:48	6:48	8:51	6:47	6:47	6:47	6:48	8:41
5	Stutz	Anderson	R. E. Maypole	El. Time	7:07	13:58	20:48	27:37	34:28	41:24	48:16	55:06	61:57	68:47	75:38	82:27	89:18	96:02	102:52	109:35
				Lap Time	7:07	6:51	6:50	6:49	6:51	6:56	6:52	6:50	6:51	6:50	6:51	6:49	6:51	6:44	6:50	6:43
6	Marmon	Dawson	Charles Erbstein	El. Time	7:44	16:26	25:32	35:14	42:15	49:14	56:06	63:02	71:36	78:31	85:25	92:24	99:21	108:59	116:02	124:29
				Lap Time	7:44	8:42	9:06	9:42	7:1	6:59	6:52	6:56	8:34	6:55	6:54	6:59	6:57	8:38	7:03	8:27
7	Mason	Haupt	F. E. Duesenberg	El. Time	7:35	14:56	22:15	29:34	36:53	44:08	51:26	58:31	65:35	73:08	80:21	87:24	94:37	104:05	111:05	119:21
				Lap Time	7:35	7:21	7:19	7:19	7:19	7:16	7:18	7:5	7:04	7:33	7:13	7:3	7:13	9:28	7:00	8:16
8	Keeton	Burman	E. A. Moross	El. Time	7:17	14:39	21:58	29:14	36:33	43:52	51:07	58:24	65:39	72:51	80:10	87:30	94:50	102:08	109:35	117:03
				Lap Time	7:17	7:22	7:19	7:16	7:19	7:19	7:15	7:17	7:15	7:12	7:19	7:20	7:20	7:18	7:27	7:28
12	Velie	Henning	Otto Henning	El. Time	8:33	24:44	49:45	58:49												
				Lap Time	8:33	16:11	25:01	9:04												
14	Mercer	DePalma	Mercer Auto Co.	El. Time	7:24	14:46	22:18	29:48	37:19	44:56	52:24	59:51	67:25	74:57	82:32	89:46	97:21	104:46	111:51	119:13
				Lap Time	7:24	7:22	7:32	7:30	7:31	7:37	7:28	7:27	7:34	7:32	7:35	7:14	7:35	7:25	7:05	7:22
15	Isotta	Grant	W. Ziegler, Jr.	El. Time	7:35	15:03	22:30	30:2	37:32	45:06	52:45	60:18	67:55	75:39	83:22	91:07	98:51	106:31	114:17	122:02
				Lap Time	7:35	7:28	7:27	7:32	7:30	7:34	7:39	7:33	7:37	7:44	7:43	7:45	7:44	7:40	7:46	7:45
16	Erwin Spl.	Bergdoll	Erwin Bergdoll	El. Time	7:21	15:51	23:00	30:10	37:27	44:44	51:50	59:3	66:10	73:23	80:37	87:56	95:08	102:27	109:38	116:50
				Lap Time	7:21	8:30	7:09	7:10	9:17	7:17	7:6	7:13	7:7	7:13	7:14	7:19	7:12	7:19	7:11	7:12

and all the curves had been at least partly straightened out and widened, but in parts the surface of the roads was treacherously slippery, owing to the fact that the oil had not had time properly to soak into the earth. Consequently, all the drivers were inclined to cautiousness, and only by skilful driving were disastrous accidents avoided.

Despite the slipperiness of the course, however, Anderson was apparently easily able to set up a new receord for the principal race, which is all the more remarkable by reason of the fact that the distance covered last year was only 254 miles. In the free-for-all last year, it is true, DePalma covered the 305 miles at an average rate of 70 miles an hour, but this year there was no free-for-all. Still, Anderson easily exceeded DePalma's last year's record. His time for the 302 miles was 2:53:38.97, which figures out at the rate of 71.4 miles an hour.

Following Anderson home in the race for the Elgin trophy came Ralph Mulford at the wheel of a Mason, whose recorded time was 260:31.25—nearly seven minutes behind Anderson—which is at the rate of 69.7 miles an hour. Spencer Wishart in a Mercer, who crossed the line next and who at one time had held the lead and at any time looked as if he might develop into the winner, needed 269:58.95 to make the distance; his average time was 67.5 miles an hour. Harry Grant, hero of two Vanderbilt races, was fourth in an Isotta-Fraschini in 282:14.10, or 64.3 miles an hour; and Ralph DePalma (Mercer, of course) was the only other man of the 12 that started to cross the line before the survivors were flagged. His time was 287:24.38, which is at the rate of sixty-three and one-tenth miles an hour.

In the lighter car race that proved De Palma's particular glory, the wily Italian crossed the tape in 271:56.90, which is at the rate of 66.3 miles an hour and therefore is considerably slower than the 70-mile average he set up last year for the same distance. Next after De Palma, Joe Dawson,



ANDERSON GETS CHECKERED FLAG AND ELGIN NATIONAL TROPHY

SUMMARY OF THE CHICAGO AUTOMOBILE CLUB TROPHY RACE WHICH WAS

No.	Car	Driver	Entrant		1 8 Miles 2030 Ft.	2 16 Miles 4060 Ft.	3 25 Miles 810 Ft.	4 33 Miles 2840 Ft.	5 41 Miles 4870 Ft.	6 50 Miles 1620 Ft.	7 58 Miles 3650 Ft.	8 67 Miles 400 Ft.	9 75 Miles 2430 Ft.	10 83 Miles 4460 Ft.	11 92 Miles 1210 Ft.	12 100 Miles 3240 Ft.	13 108 Miles 5270 Ft.	14 117 Miles 2020 Ft.	15 125 Miles 4050 Ft.	16 134 Miles 800 Ft.
20	Deltal	Dawson	E. H. Delling	El. Time	7:25	14:44	21:57	29:10	36:24	43:33	50:37	59:43	66:57	74:18	83:35	90:52	98:07	105:21	112:35	119:51
				Lap Time	7:25	7:19	7:13	7:13	7:14	7:09	7:04	9:06	7:14	7:21	9:17	7:17	7:15	7:14	7:14	7:16
21	Mercer	DePalma	Mercer Auto Co.	El. Time	7:25	14:40	21:57	29:08	36:15	43:29	50:43	57:52	65:08	72:17	79:30	86:39	93:57	101:21	109:59	117:26
				Lap Time	7:25	7:15	7:17	7:11	7:07	7:14	7:14	7:09	7:16	7:09	7:13	7:09	7:18	7:24	8:38	7:27
24	Mason	Chandler	F. E. Duesenberg	El. Time	8:06	16:30	23:54	31:54	41:29	49:12	56:58	64:48	98:11	106:08	113:55	121:51	129:48	137:45	145:48	153:42
				Lap Time	8:06	8:24	7:24	8:00	9:35	7:43	7:46	7:50	33:23	7:57	7:47	7:56	7:57	7:57	8:03	7:54
25	Endicott Special	H. Endicott	E. A. Moross	El. Time	8:57	17:34	26:08	34:46	43:19	52:04	65:25	75:36	84:21	93:24	102:15	111:09	120:06	130:17	138:51	147:42
				Lap Time	8:57	8:77	8:34	8:38	8:33	8:45	13:21	10:11	8:45	9:03	8:51	8:54	8:57	10:11	8:34	8:51
22	Mason	Ricken-bacher	F. E. Duesenberg	El. Time	7:27	14:27	21:38	28:43	35:57	43:09	50:23	57:40	101:40	112:32	122:47	132:26	142:38	151:33	160:28	169:43
				Lap Time	7:27	7:00	7:11	7:05	7:14	7:12	7:14	7:17	44:00	11:12	9:55	9:39	10:12	8:55	8:55	9:15
23	Mercer	Wishart	Mercer Auto Co.	El. Time	7:36	19:27	26:52	34:10	41:34	48:51	56:07	64:29	71:54	79:11	86:29	96:19	105:27	113:00	122:14	159:21
				Lap Time	7:36	11:51	7:25	7:18	7:24	7:17	7:16	8:22	7:25	7:17	7:18	9:30	9:08	7:33	9:14	7:07
27	Mercer	Cuttrell	Mercer Auto Co.	El. Time	8:23	16:36	24:43	32:49	40:54	48:55	98:44	128:47	137:06	145:12	153:18	161:26	169:32	177:31		
				Lap Time	8:23	8:13	8:07	8:05	8:05	8:01	49:49	30:03	8:19	8:06	8:06	8:08	8:06	7:59	Out—Burned	
26	Mason	Mulford	F. E. Duesenberg	El. Time	7:19	14:29	21:41	28:54	36:04	43:10	50:11	57:18	64:23	71:34						
				Lap Time	7:19	7:10	7:12	7:13	7:10	7:06	7:01	7:07	7:05	7:11	Out—Flywheel studs sheared off					

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AND WAS RESTRICTED TO CARS HAVING LESS THAN 450 INCHES DISPLACEMENT

17 142 Miles 2830 Ft.	18 150 Miles 4860 Ft.	19 159 Miles 1610 Ft.	20 167 Miles 3640 Ft.	21 176 Miles 390 Ft.	22 184 Miles 2420 Ft.	23 192 Miles 4450 Ft.	24 201 Miles 1200 Ft.	25 209 Miles 3230 Ft.	26 217 Miles 5260 Ft.	27 226 Miles 2010 Ft.	28 234 Miles 4040 Ft.	29 243 Miles 790 Ft.	30 251 Miles 2820 Ft.	31 259 Miles 4850 Ft.	32 268 Miles 1600 Ft.	33 276 Miles 3630 Ft.	34 285 Miles 380 Ft.	35 293 Miles 2410 Ft.	36 301 Miles 4440 Ft.	Pos. at Fin.	Mi. per Hr.
132:03	139:50	147:42	155:24	163:08	170:43	178:23	220:57	229:10	238:47	247:03	258:09	266:43	275:17	283:54							
7:53	7:47	7:52	7:42	7:44	7:35	7:40	42:34	8:13	9:37	8:16	11:06	8:34	8:34	8:37							
121:49	128:59	136:06	143:12	150:25	157:35	166:27	173:43	180:49	188:46	195:55	203:07	210:25	217:35	224:46	231:56	239:04	246:14	253:22	260:31:25	2	69.7.
7:05	7:10	7:7	7:6	7:13	7:10	8:52	7:16	7:6	7:57	7:9	7:12	7:18	7:10	7:11	7:10	7:18	7:10	7:08	7:09		
121:40	129:12	135:57	142:38	054:34	161:24	168:08	176:34	184:07	193:57	200:46	207:30	214:14	225:15	232:09	238:55	247:50	254:37	263:06	269:58:95	3	67.5
6:54	7:32	6:45	6:41	11:56	6:50	6:44	8:26	7:33	9:50	6:49	6:44	6:51	10:54	6:54	6:46	8:55	6:47	8:29	6:52		
117:36	124:33	131:25	138:18	146:54	154:49	164:13	171:21	178:21	185:14	192:08	198:58	205:52	212:39	219:30	226:22	233:13	240:00	246:50	253:38:97	1	71:4
8:01	6:57	6:52	6:53	8:36	7:55	9:24	7:8	7:00	6:53	6:54	6:50	6:54	6:47	6:51	6:52	6:51	6:47	6:50	6:48		
131:27	138:24	150:03	158:41	165:43	172:39	179:40	186:43	193:47	200:51	210:15	228:24	235:50	245:19	255:34	263:27	270:28	277:43	284:57			
6:58	6:51	11:39	8:38	7:2	6:56	7:1	7:3	7:4	7:4	9:24	18:09	7:26	9:29	10:15	7:53	7:01	7:15	7:14			
126:26	133:35	140:42	147:46	154:48	161:57	169:14	176:32	184:01	195:30	209:50	221:19	241:33	250:59								
7:5	7:9	7:7	7:4	7:2	7:09	7:17	7:18	7:29	11:29	14:20	11:29	20:14	9:26								
124:24	131:54	141:15	Out—broken cylinder																		
7:21	7:30	9:21																			
126:29	133:44	141:05	149:27	157:05	164:20	171:44	179:19	186:55	194:29	203:19	212:39	220:32	239:57	247:43	355:34	263:34	271:27	279:28	287:24:38		63.1
7:16	7:15	7:21	8:22	7:38	7:15	7:24	7:35	7:36	7:34	8:50	9:20	7:53	19:25	7:46	7:53	8:12	7:53	8:01	7:56		
129:50	137:35	145:20	153:7	161:22	169:16	177:17	185:02	192:45	200:38	208:38	216:38	244:46	233:33	241:41	249:40	257:43	265:46	273:59	282:14:10		64.3
7:48	7:45	7:45	7:47	8:15	7:54	8:1	7:45	7:43	7:53	8:00	8:00	8:08	8:47	8:8	7:59	8:03	8:03	8:13	8:15		
124:09	132:07	141:56	149:02	156:24	163:26	170:24	177:29	184:40	191:57	199:09	206:20	213:36	220:50	228:14	Out						
7:19	7:58	8:49	7:6	7:22	7:2	6:58	7:5	7:11	7:17	7:12	7:11	7:16	7:14	7:24							

who two years ago set the Indianapolis Speedway enthusiasts by their ears by winning the 500-mile race in meteoric fashion, pounded over the line in a Deltal, and his time—279:52.75—shows that he covered the distance only slightly slower than did De Palma. These two cars were the only ones to cross the finish line before the flag dropped, leaving Chandler in a Mason and Rickenbacher in another Mason still running; Chandler was awarded third place.

On Saturday, when the big car race was run, the weather was terrifically hot—which led those in the great bleacher in front of the pits to bless a management that had provided the stand with a canvas roof, a thing hitherto unheard of—and the heat and the strain of trying to keep the cars on the track soon told on the drivers. Though there were no really alarming accidents, Rickenbacher thrilled the spectators and gave slight promise of what might be expected almost before he got fairly started. Before he had completed his first lap he skidded into the ditch, ripped off a tire and bent a front axle so badly that the car was withdrawn. On the preceding day, the heat was only slightly less intense and ice and cold water in bottles were much in demand by the drivers who stopped in front of the pits for supplies.



DE PALMA (MERCER) ACCOUNTING FOR CHICAGO TROPHY

The only other accident that is worthy the name occurred when Anderson threw a tire off his Stutz in the 20th lap of the big car race. The tire burst almost directly in front of the big grandstand, and after a couple of skids Anderson brought the car to a standstill—but the tire kept right on going. It bowled straight down the track until it encountered an over-zealous militiaman who attempted to "tackle" it, but without any success at all. It knocked him cleanly off his pins and then rolled into the ditch, while the course guard picked himself up and limped back to his station.

As was to be expected, the big car race furnished most of the excitement, and it

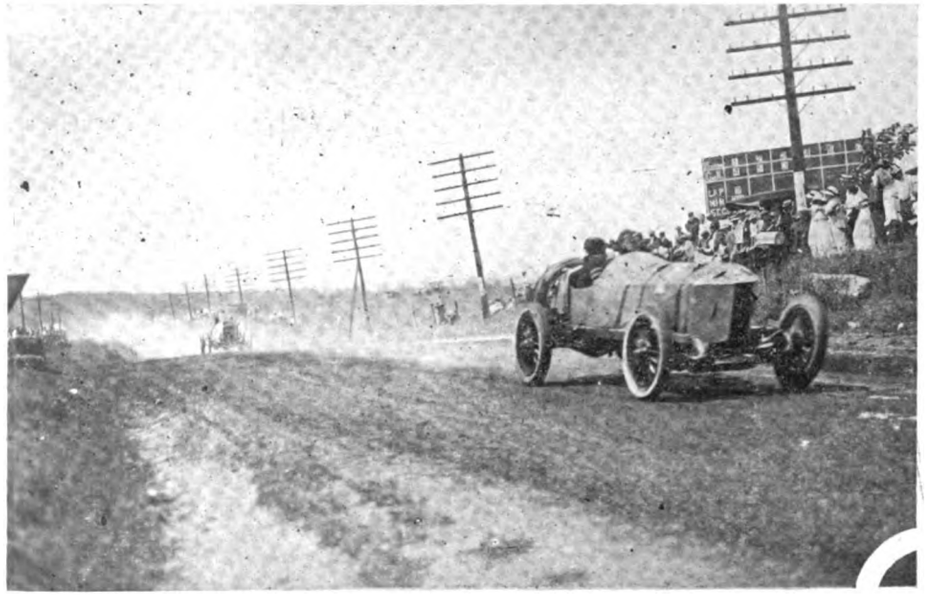
FOR CARS HAVING LESS THAN 300 CUBIC INCHES PISTON DISPLACEMENT

17 142 Miles 2830 Ft.	18 150 Miles 4860 Ft.	19 159 Miles 1610 Ft.	20 167 Miles 3640 Ft.	21 176 Miles 390 Ft.	22 184 Miles 2420 Ft.	23 192 Miles 4450 Ft.	24 201 Miles 1200 Ft.	25 209 Miles 3230 Ft.	26 217 Miles 5260 Ft.	27 226 Miles 2010 Ft.	28 234 Miles 4040 Ft.	29 243 Miles 790 Ft.	30 251 Miles 2820 Ft.	31 259 Miles 4850 Ft.	32 268 Miles 1600 Ft.	33 276 Miles 3630 Ft.	34 285 Miles 380 Ft.	35 293 Miles 2410 Ft.	36 301 Miles 4440 Ft.	Miles per Hour
127:06	134:24	141:42	152:13	159:36	169:45	177:13	184:33	191:58	199:20	206:46	214:06	224:54	232:21	239:56	247:19	254:44	262:06	271:11	279:52.75	
7:15	7:18	7:18	10:31	7:23	10:09	7:28	7:20	7:25	7:22	7:26	7:20	10:48	7:27	7:35	7:23	7:25	7:22	9:05	8:41	
124:43	132:04	139:29	149:46	157:27	164:54	172:20	179:45	187:15	195:02	202:52	210:26	217:57	226:07	233:53	241:30	249:08	256:44	264:18	271:56.90	66.3
7:17	7:21	7:25	10:17	7:41	7:27	7:26	7:25	7:30	7:47	7:50	7:34	7:31	8:10	7:46	7:37	7:38	7:36	7:34	7:38	
161:35	169:28	182:53	195:19	203:44	211:36	219:58	228:13	236:15	244:18	258:45	267:04	275:14	283:52	294:07	302:33					
7:53	8:53	13:25	12:26	8:25	7:52	8:22	8:15	8:02	8:03	14:27	8:19	8:10	8:38	10:15	8:26	Running when flagged				
156:11	166:40	175:15	183:51	192:26	201:06	209:59	219:48	227:34	236:12	245:00	254:29	268:44	282:19							
8:29	10:29	8:35	8:36	8:35	8:40	8:53	9:49	7:46	8:38	8:48	9:29	14:15	13:35	Stopped—Driver ill						
180:05	193:36	203:28	215:10	227:29	239:34	249:39	259:42	269:20	279:27	297:27										
10:22	13:31	9:52	11:42	12:19	12:05	9:59	10:05	9:38	10:07	18:00	Running at finish									
168:28	185:01	192:35	200:01	207:26	214:52	222:23														
9:07	16:33	7:34	7:26	7:25	7:26	7:31	Out—Broken spring													

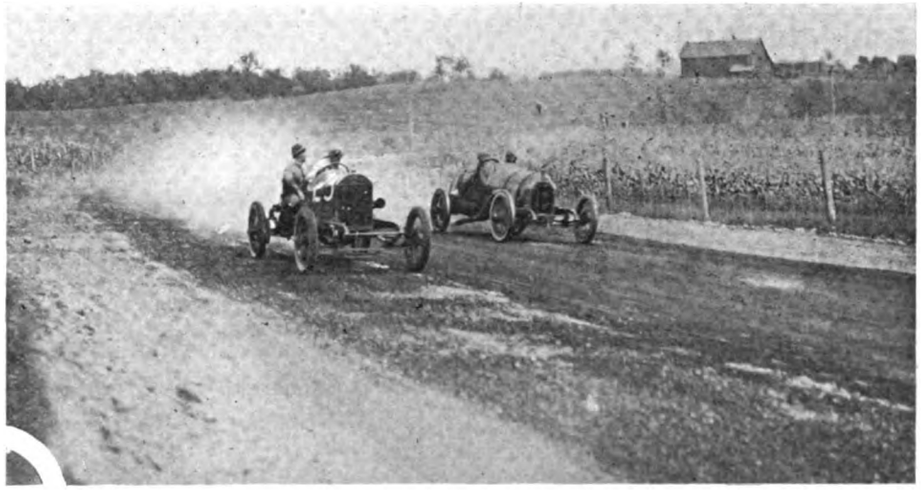
out motor bearing

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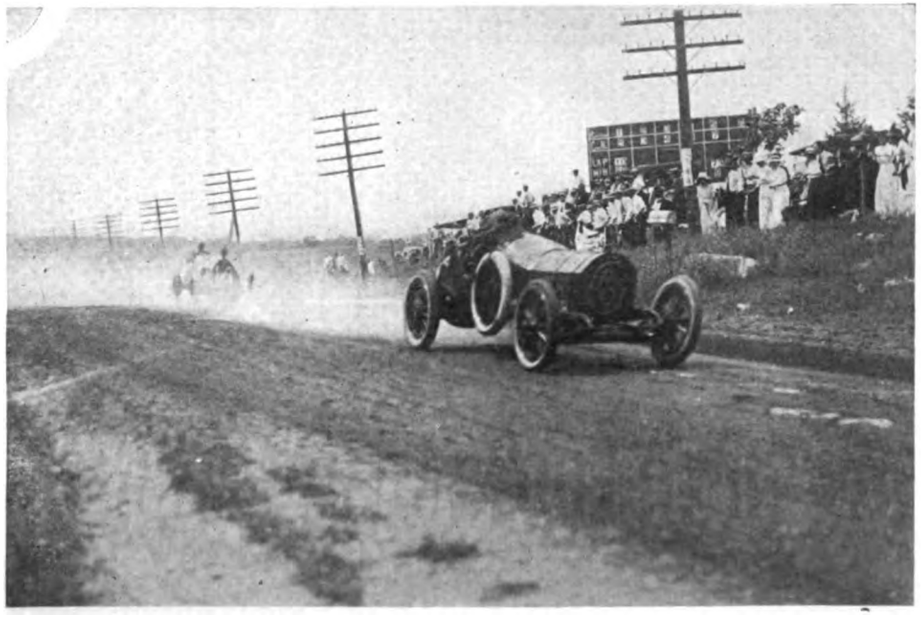
WHERE THE GOING WAS GOOD ON THE ELGIN COURSE AND THE DRIVERS "OPENED UP"



W. ENDICOTT (CASE) LEADING HAUPT (MASON) OVER BRITTON "HILL"
EVIDENCE THAT MOTORISTS WERE INTERESTED IN THE SPORT



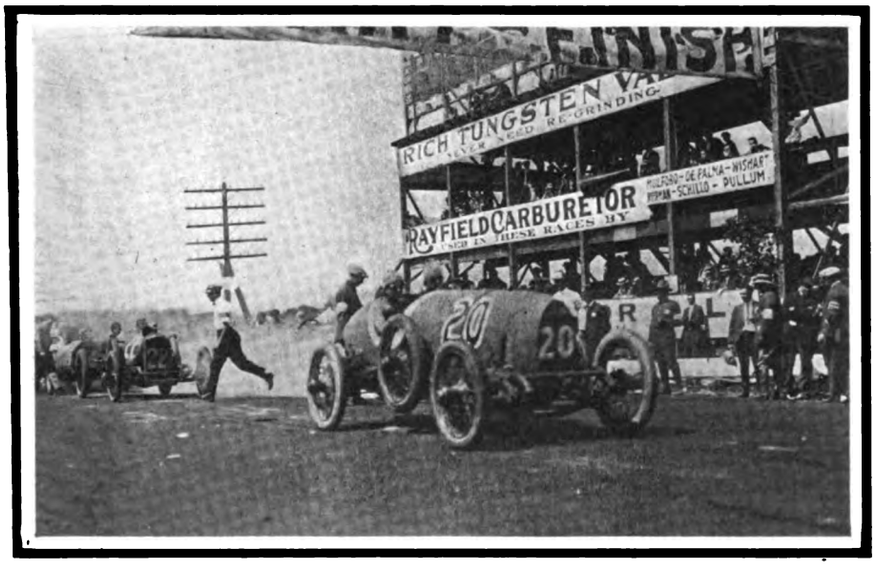




BURMAN (KEETON) OVERTAKING H. ENDICOTT (NYBERG) MID THE CORNFIELDS
WHEN DE PALMA WAS "INCHING UP" ON DAWSON AND THE MARMON

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was on it that most of the attention centered. Just before Starter Fred Wagner lined the cars up at 11 o'clock in the morning, three of the 15 cars that were scheduled to start were scratched, leaving only 12 to be sent away at 30-second intervals. The cars that did not draw up to the line were the Deltal, which Dawson drove into second place on the previous day, and the two Nybergs, which were to have been driven by Harry Endicott and Tom Madden. For some reason not made public, Madden's car was not permitted to start by the referee, and Harry Endicott, who was badly burned the previous day when his car caught fire, had not sufficiently recovered to take his place at the wheel. At the last minute, Dawson drew up to the line in a Marmon entered by Charles Erbstein.



DAWSON STARTING IN THE DELTAL WHICH PERFORMED SURPRISINGLY WELL

In the midst of a dense cloud of blue-black smoke, Wagner tapped "Farmer Bill" Endicott (Case) on the shoulder promptly as the last of the four starting bombs exploded high over the heads of the crowd in the grandstand; Rickenbacher got away next in his Mason and was followed by Mulford in another chocolate-colored Mason; Mulford's popularity was evidenced by long-continued cheering, and the start of Wishart of the Mercer team, who got away next, was almost overlooked. Gil Anderson in his ghostly Stutz followed Wishart, and almost from the start he gave intimation of his intention to "drive the heads off" all the others—if he could; Dawson, too, was roundly cheered as he started in sixth position, and, closely following him Haupt, in another Mason, slid over the line. Burman in his squat, green Keeton was next, and the others followed in the following order: Henning (Velie), De Palma (Mercer), Grant (Isotta-Fraschini), Erwin Bergdoll (Erwin special).

The first accident of the race, and the only one of any account, occurred in the very first lap, when Rickenbacher attempted to pass Endicott and in doing so skidded into the ditch, ripped off a tire and broke an axle; his car was withdrawn. When the first of the flying cars rounded into the stretch Wishart, who started fourth, had passed the three drivers ahead of him and gained the lead; his first lap was reeled off in 6:51, which was faster than any one else negotiated the initial trip around the course. Later in the race his time was several times equalled by others, and still later—in the 20th lap—he covered the distance in 6:44, which was the fastest lap turned in the race. As a result, he gets the special prize of $200 offered for the fastest lap.

For three laps Wishart held the lead, with Anderson clinging close behind in second place and Mulford and Burman third and fourth, respectively. In the fourth lap, however, a stop for tires put Wishart back into fourth place and Anderson swung into the lead, never to to relinquish it. When Anderson moved up from second place it became apparent that it was his determination to push his car for all it was worth, and it was this bit of stratagem on his part that undoubtedly is largely responsible for his victory; none of the drivers expected that he would hit up such a hot pace so early in the race, and that even his own coaches and those in the pits were ignorant of his intentions is made plain by the fact that they continually signalled him to reduce his speed and to save his car. Despite these injunctions, however, he kept his Stutz pounding along at the same rate, and as each succeeding lap was reeled off—most of them were well under seven minutes—he steadily increased his lead over the field. At no time after he assumed the lead from Wishart was he in real danger of losing it to any one else, and thereafter the race became a fight for the other places.

When Anderson took the lead, Mulford in his Mason moved up from third into second place and he, too, held his place with one exception until Wagner waved the checkered flag; in the 20th lap Wishart nosed him out, but on the following lap dropped back again into third place, where he stayed for four laps, when he dropped back another place for nine more laps before he finally regained third place and finished in that position.

When the half-way mark in the long grind was passed, the order of the cars and drivers was as follows, Henning and his Velie having dropped out in the fifth lap when his car burned out a bearing:

1 Anderson, Stutz.
2 Mulford, Mason.
3 Wishart, Mercer.
4 Burman, Keeton.
5 Bergdoll, Erwin Special.
6 Haupt, Mason.
7 De Palma, Mercer.
8 Grant, Isotta.
9 Dawson, Marmon.
10 Endicott, Case.

It was not until the 25th lap that Bergdoll, of whom great things had been expected, showed up among the first five cars. At that time Mulford still was second, with Haupt in his Mason third and Wishart, who had stopped for tires, fourth. Bergdoll then was fifth and in the next lap he moved up into third place, when Haupt dropped back into sixth. De Palma also moved up one place, from sixth to fifth, and though it was confidently expected that he would move still further forward in view of his victory of the day before, tire trouble held him back. Bergdoll continued, then, in third place until the 32d lap—four laps from the finish—when he was forced out by mechanical trouble, and Wishart took his place and held it to the end. Mulford then was second, which place he had held since the 21st lap, and Grant in the Isotta was fourth. Burman, who had dropped back from third to seventh in the 27th lap, was forced out in the 31st lap with a broken cylinder.

The light car race which was run on Friday was a fit forerunner of the event for the Elgin trophy, for in taking the lead at the 11th lap and holding it to the end De Palma virtually set the style for Anderson in the big car race. Mulford in his Mason was the first of the eight drivers to be sent away by Starter Wagner, and he held first place until the next time around, when Rickenbacher in another Mason wrested it from him and held it until the seventh round, when Mulford again showed in the front for four laps, when he sheared his

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flywheel bolts and was forced out. It was then that De Palma, who had been in third and then in second place, moved up and never was displaced. At the same time, Dawson in his Deltal moved up from third into second place, where he stayed right through to the end.

Early in the race it became apparent that the sand and oil on the course combined with the rising temperature were to have a bad effect on tires long before the finish. Nearly all of the drivers had all their share of tire trouble, though despite this fact changes in positions were not as frequent as might be supposed would be the result. Chandler, in a Mason, for instance, held fourth place from the 16th lap until he was flagged in his 31st lap; Wishart in his Mercer held fifth until a broken spring put him out in the 23rd lap, and Rickenbacher was sixth until the 23d, and fifth from thence on to the 27th, when he retired. Luttrell in one of the Mercer entries went out in the 7th lap with a burned-out connecting rod bearing when he was in seventh place, and Endicott in a Case quit with a broken water pipe in the 30th lap, when he was third.

Of all the cars that started in the two races only one had a six-cylinder motor, and that one was "Farmer Bill" Endicott's Case; the others all had four-cylinder motors and the largest of the lot was Bergdoll's Erwin Special, which had slightly over 448 cubic inches piston displacement. The smallest car was Harry Endicott's Nyberg, which had only 220 inches displacement. The specifications of all the other cars in the order in which they finished are shown in the appended table.

Anderson's Stutz rolled over the course on Firestone tires, as did both Wishart's and De Palma's Mercers; Grant's Isotta was shod with Palmer tires; Mulford's Mason carried Braender tires and Dawson's Deltal was equipped with Diamonds. All but one of the cars to finish in the money was sparked by Bosch ignition apparatus, the single exception being Chandler's Mason, which is equipped with a Splitdorf magneto. Schebler carburetters were used by Dawson, Chandler and Anderson; De Palma, Mulford and Wishart used Rayfields and Grant used a Zenith. Dawson, De Palma and Grant had the only wire-wheeled cars to finish in the money.

Oldfield's Mile Record is Rejected.

Because the contest board is of the opinion that the Pendleton automatic timing device which was used on the occasion did not meet the official requirements, the A. A. A. has rejected Barney Oldfield's claim for the mile record—46⅗ seconds. Oldfield's performance was made in a time trial at Bakersfield, Cal., on April 22nd last.

RICKENBACHER PROVES STAR ON SIOUX CITY'S SPEEDWAY

Wins Six Out of Ten Numbers on Two-Day Program—Chandler Is Winner Twice—Two Time Trials Included.

Winning six out of 10 events, Ed. Rickenbacher proved easily to be the star performer at the racemeet held Monday and Tuesday, 1st and 2nd inst., by the Sioux City Automobile Club and Speedway Association on the two-mile speedway in that Iowa city; Rickenbacher carried off first money in events from two-mile time trials to a 48 mile race, and two of the first-money purses which he failed to annex were handicap contests.

Chandler, who, like Rickenbacher, drove a Mason special, won two of the remaining four and gave an excellent account of himself in other events; Sioux City race fans applauded Rickenbacher when he turned the two-mile oiled oval on the second day in a time trial in 1:27⅘, but no official credit attaches to the performance because of the absence of electrical timing apparatus.

Aside from the races won by Rickenbacher and Chandler in their Masons, a six-mile handicap was taken by Cailluette in a Moon, with Keagle (White) second and O'Donnell (Mason) third. The other handicap, also six miles, went to Schrunk (White "six"), with Raimey (Ohio) next and the ever-present Rickenbacher third. The summaries:

Monday, September 1.

Ten miles—Won by Chandler, Mason; second, Milton, Mercer; third, O'Donnell, Mason; fourth, Overmyer, Colby. Time, 9:04⅗.

Ten miles, in two heats—Won by Rickenbacher, Mason; second, Menenghetti, Fiat; third, John Raimey, Ohio; fourth, Chandler, Mason Special. Time, 7:57⅗.

Two miles, time trial—Rickenbacher, Mason, 1:31⅗; Menenghetti, Fiat, 1:33.

Six miles, handicap—Won by Cailluette, Monn; second, Keagle, White; third, O'Donnell, Mason. Time, 5:52⅗.

Tuesday, September 2.

Ten miles—Won by Rickenbacher, Mason; second, Chandler, Mason; third, O'Donnell, Mason; third, Gnehm, Colby. Time, 12:26⅗.

Fourteen miles—Won by Chandler, Mason; second, O'Donnell, Mason; third, Gnehm, Colby. Time, 12:26⅗.

Two miles, time trial—Rickenbacher, Mason, 1:27⅘.

Six miles, handicap—Won by Schrunk, White "Six"; second, Raimey, Ohio; third, Rickenbacher, Mason. Time, 5:30.

Forty-eight miles—Won by Rickenbacher, Mason; second, Chandler, Mason; third, Schrunk, White "Six." Time, 38:12.

Disbrow Cleans Up at Davenport Meet.

As is usual, Louis Dsbrow proved a little more than half the show at the Labor Day racemeet that was staged by J. Alex Sloan on the Davenport (Ia.) one-mile dirt track, and though he failed of establishing any "records" or "near" records, he nevertheless drove fast enough to satisfy spectators and to beat nearly all the other drivers who competed against him. Incidentally, he made the best time of the day by circling the track in a Simplex in 53 seconds flat. The summaries:

One mile time trial—Won by Disbrow (Simplex); time, 53 sec.; second, Wm. Endicott (Case); time, 55⅘; third, Lou Heineman (Case); time, 59⅘.

One mile exhibition by Disbrow (Case); time, 56⅗.

Five mile free-for all—Won by Disbrow (Simplex); second, Endicott (Case). Time, 5:30⅗.

Two mile free-for-all handicap—Won by Disbrow (Simplex); second, Heinie Ulbricht (Pirate); third, Endicott (Case). Time, 2:27⅘.

Three mile novelty race; two miles run, wheel changed and third mile run—Won by Endicott (Case); second, Disbrow (Simplex). Time, 3:58⅗.

Five mile free-for-all—Won by Disbrow (Case); second, Heinemann (Case); third, Eddie Hearne (Pirate). Time, 5:38⅗.

Three mile free-for-all—Won by Heineman (Case); second, Ulbricht (Pirate). Time, 32:9.

Protest Follows Oceanside Beach Race.

It is not unlikely that the beach race run on the sands at Oceanside, Cal., on August 31st, will be run over again, for though Tony Janette at the wheel of a National finished first, he was protested and Referee Batchelder refused to award him the prize, which amounts to $500 in cash. It is claimed that Janette failed to cover the course properly and that owing to the absence of the checker at the Delmar turn—he was helping Janette dig his car out of the sand—no record of his passing that point could be established.

Rickenbacher is Finally Reinstated.

Due to mitigating circumstances, E. V. Rickenbacher, of Des Moines, Iowa, has been restored to good standing by the contest committee of the A. A. A. He was suspended in 1912 for participating in unsanctioned track events, his punishment not being due to expire until January 1st next.

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HANDLING MAN WHO WANTS BIG TRADE PRICE

Reilly Advises Salesman Against Too Close Following of Prospect in Certain Cases—"If He Really Wants Your Car, Let Him Dicker and Come Down," His Opinion—The Pro and the Con of it.

"Say, Mr. Reilly, what am I going to do out DeLano, the fellow who wants to ade?" asked Reilly's salesman, as he approached the dealer, who was looking over job in the repair-shop.

"Why, what now?"

"I don't know whether to follow him up

"No matter how much it is, that's what I want to know," laughed the salesman. "Aren't you going to tell me?"

"What do you suppose Napoleon Bonaparte had for breakfast this morning? Answer that; it's much easier," smiled the dealer.



"NOW, NOW, WAIT A MINUTE!" AND UP WENT REILLY'S HAND AGAIN

me more or let him alone and trust to :k. The son-of-a-gun wants $1,200 for his r and we can't possibly give him more an $800. If he didn't have that darned l boiler to trade in I would go after him a new, clean sale, but as it is I'm trying sell him a car at a profit and he's trying sell his old car for a big price, and I'm nged if I know who's going to be the st salesman."

"We certainly can't take the car and lose oney on it; we might better not take it," plied Reilly.

"That's just it," asserted the salesman. "I ant him to come down on his price and he ants us to come up, and what I want to ow is: If I chase him up is he going to ng out for the high price, or if I let m alone and try to make him chase me am going to lose him?"

"You don't want to know much, do you?"

"Something hot, probably; but anyway, what would you do?"

"Well," began Reilly, meditatively, "does he want one of our cars? Or is he juggling with three or four dealers for a price on that old wagon?"

"He has been feeling around, but I'm quite sure he prefers our car to any of the others. I've shown him what we've got and I think it appeals to him. But what sticks in his crop is that old boat; he wants too much for it."

"But are you sure he wants our car?"

"I'm positive of it."

"Then I wouldn't follow him up too close; see if you can't get him on the anxious seat instead of seating yourself on it. Make him seek you and see if you can't put him on the aggressive instead of yourself."

"But——"

"Now, now!" said Reilly, with a silencing gesture of his hand, "I know just what you're going to say, and if you say it I'll think you came in here to start an argument instead of to get information. You're going to say that So-and-so says so-and-so and that he disagrees with what I just——"

"But——"

Where Conditions Alter Situation.

"Now, now, wait a minute!" and up went Reilly's hand again. "Selling a car where there is no trade and selling where there is a trade are two different things. Selling a car where the man wants it and trying to sell him when he isn't sure what he wants are two more different things, and making a trade with a man who wants your car and making a trade with a man who isn't particular what he buys are two more something-elses-again.

"If a man isn't particular whether he buys your car or some other brand, you certainly have got to follow him up and give him the desire to own the car, regardless of whether he wants to make a trade; but if the man actually has his mind made up and you are sure of it, as you say is the case this time, and if he wants to trade, I don't think it does any harm to let him wiggle by himself a——"

"But——"

"Now, mind you," continued Reilly. "This is nothing but my own private opinion. I may be wrong, but you asked me for it, didn't you?"

"Yes, but——"

"Do you remember Goldman, the man we traded with a month ago?"

"Yes, but——"

Getting Prospect to Cut His Price.

"Well, I handled him just that way, and I have handled others the same way. Goldman wanted to trade and, as usual, he wanted about $500 more than we could give him and make anything on the deal. Goldman's next door neighbor is one of our owners, and the neighbor certainly has gotten top-notch satisfaction and service with his car. Goldman came in and looked over the new cars and said he'd buy if I would allow him $1,300. I couldn't do it and told him so. He said 'Very well' and left. I called him up a day or two later and told him I could sell his car for him right then

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for $900, but he answered 'Nothing doing!'

"After that I left him alone. A week later he called up and wanted to know what I would give him for the car. I told him $800, the same as I offered him in the first place. He wanted to know what had become of the man who was going to give him $900 for it. I told him he had bought another car. Goldman kept calling me up and kept coming down, and finally he got down to $1,000. I thought I had strung him along about enough then, and told him I would make a final offer of $900 and split the difference, but that I couldn't lose money on him. He took it."

"That's all right, but——"

When not to Press Prospect too Hard.

"Yes, I know what you're going to say; supposing I had lost him. If I had lost him I would have lost him, but I knew my man pretty well and knew about how he stood. And, at that, I couldn't and wouldn't have given him more than $900. In a different case I might have done differently. It all depends on the case and the man and is pretty much a matter of personal judgment each time, but if a man really wants your car and wants to trade in an old car I think it is safe not to press him too hard.

"It is not impossible that I might have lost Goldman through my tactics, but there was just as much possibility that he would have been lost through another course of procedure. Try your best and you won't make every sale; it's a practical impossibility, and all you can do is to go ahead, use your best judgment and make as many as you can.

Avoiding Trade Argument on Start.

"If a man doesn't want the car, you certainly have got to work on him regardless of whether he is out for a trade, and if he has a car to get rid of I thing it's good policy to dodge the trading proposition if you can until you have had a chance to get in some of your stuff on your own car. If you buck up against the trade the very first thing and the prospect wants and demands more than you can give him, it is likely to put an end to the whole business right there. It certainly doesn't leave him in a very receptive frame of mind, if you start your attempted sale by getting into an argument over the trade. He——"

"But——"

"Say!" exclaimed Reilly, "you've been 'butting' for twenty minutes; now go ahead and butt your head off."

"Well, do you honestly think it's unwise to let a man alone at any time?"

"Certainly, if he——"

"But in the case of DeLano," continued the Salesman. "Don't you think that he could be followed up and sold regardless of the fact that he wants to trade. In the case of the used car alone he is the salesman and I am the buyer, and in the case of our new car I am the salesman and he is the buyer. If I want to sell him, haven't I got to follow him up. What's the matter with keeping after him on the new car proposition without paying much attention to the trading feature of the case?

"If I keep after him on the new car, hasn't he got to keep after me on the car he has to sell? Hasn't he——"

"But——"

"Wait a minute! Wait a minute!" said the salesman. "Any salesman knows, or ought



"THERE IS NO SET RULE," ASSERTED REILLY AS HE OPENED THE DOOR

to know, that there is a time to talk and a time to let the prospect talk; it's only a question of when those occasions present themselves. I know a sale that was made where the prospect had become indignant at the offer that was made for his old car and had ordered the salesman not to come near him again. But the salesman followed him up and kept after him and finally made the sale and didn't give the man as much as had been offered for the old car in the first place. This salesman believed in keeping after a man as long as he was any kind of a prospect. He——"

Induce Buyer to Help Sell Himself.

"But this man hadn't been brought to the point where he actually wanted the car," interrupted Reilly. "If he had been dropped there he probably wouldn't have bought at all. What I said was that where a prospect really wants a car and is dickering for better terms on a trade, it isn't bad practice to let him alone to a certain extent and let him come down on his price, the same as you would do if you had something to sell and were likely to come down to make a sale.

"I don't say that after you have worked on a man until he commences to want a car you should drop him entirely, but I have known instances where running after the man too much has killed the sale because he got it in his head that he ought to get more for the old car than was offered him. The appearance of too much eagerness on the part of the salesman acts badly on the prospect. In the case of DeLano, you know your man, don't you?"

"Yes, pretty well."

Letting Customers Make the Advances.

"Well, in that event your judgment ought to tell you what to do with him. I should imagine that it might be a good plan to keep your eye on him for a few days and see what happens; see if he won't start to come after you. If he once starts to come your way you are in more of a position to dictate terms than if you are running after him and trying to beat him down on his old car price. It's peculiar, too, that once you weed out the rest of the cars somewhat and get the prospect's mind on yours and get him to making you offers he generally doesn't remember that when he started out to buy a car he had a list of four or five to select from. He begins to sell himself. His interest is aroused and the more he figures over the proposition and wonders how much he possibly can get from you for his old car the more convinced he is that your car is about the only one for him to buy.

Dealer Who Refuses to Urge Trade.

"Once he starts to come you ought to start to leave him alone, and leave him alone in proportion to the extent he will come after you. I know a dealer who absolutely refuses to assume any aggressiveness with a prospect who comes in of his own volition and wants to trade. The dealer assumes that if the man hadn't preferred his car above all others he wouldn't have come in and that if he wants it he is more likely to come down on his used car if left to make all the advances himself. It may not sound like salesmanship, but you've got to give him credit for making sales through those methods. It's Blucher, over at Middletown; he says that if he kept after that type of prospect he would lose sales."

"Maybe he's right," said the salesman.

"There's no set rule," asserted Reilly, as he started for the office, whither Nellie had summoned him to answer the telephone.

As he was passing through the door he stopped to add, "There are a great many so-called rules on salesmanship, and to most of them there are exceptions, but the exceptions are as numerous as the hairs on your head."

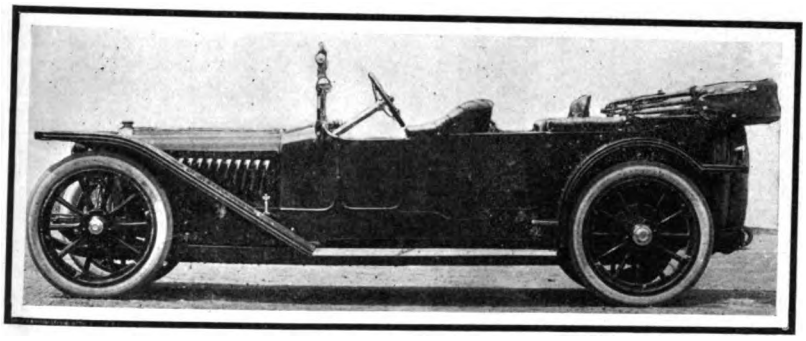
"My head or your head?" asked the salesman as Reilly slammed the door.

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THIRD UNDERSLUNG "SIX" ADDED TO AMERICAN LINE

New Model the First at Medium Price to Have Six-Passenger Body—Chief Difference from Others in Motor Dimensions.

Marking a departure from the policy of the company to limit the passenger capacity of its lower-priced cars to four persons, the American Motors Co., of Indianapolis, Ind., for which the J. I. Handley Co. is the distributer, has quietly developed and now is placing on the market a third six-cylinder chassis, equipped with a six-passenger body, to sell for $2,950. In reality, the new model takes the place of the "Traveler" model which had a 5⅜ x 5½-inch motor and sold for $4,500, and is in addition to the two six-cylinder models already produced, one of them a "big six" with a 4½ x 6 motor, and the other a "light six" with a 4 x 6 motor.



SIX-PASSENGER AMERICAN UNDERSLUNG "SIX" WHICH SELLS FOR $2,950

Except for the substitution of a new and improved type of two-unit electric lighting and engine starting equipment for the one used in the past and an alteration in the size of the motor dimensions, the new model is practically identical with the already familiar "644," which has a 4 x 6 motor rated at 40 horsepower and is fitted with a four-passenger body. Another important difference between the two models is that the wheelbase of the new one is 140 inches as against 132 inches for the older one. The new model is designated "646," the figures indicating that it has six cylinders, is rated at 40 horsepower and mounts a six-passenger body. The bore and stroke of the new motor are 4¼ and 5½ inches.

Other than for the difference in cylinder dimensions, the new motor is substantially the same as its predecessors, the six-cylinders being cast in a block but with separate exhaust ports for each cylinder; the exhaust manifold is bolted on and is easily removable. Lubrication is by splash and force feed to the main bearings and connecting rod bearings, the level being maintained constant and the oil forced by a positive gear pump.

The transmission elements, including large diameter cone clutch provided with spring inserts to ensure smooth action, selectively operated change-gear mechanism providing four forward speeds, straight propeller shaft and full-floating rear axle of the same "built-up" pattern that has been used to such good purpose for so long, are the same as those in the other six-cylinder models. Obviously, some slight alteration has been necessary in the weight of the springs, though they remain of the same type and support the chassis frame beneath the axles in the distinctive American manner.

The size of the tires in the new model is the same as those used on the light "six" four-passenger model—namely, 38 x 4½—and the equipment also is the same. Included in the list there is the combined electric lighting and engine starting apparatus, a top with side curtains and boot, windshield, speedometer and all the usual fitments, including tire repair kit, jack, horn, mats, tools, spare parts, etc.

Bosch Company to Build Casino.

Work has been started by the Bosch Magneto Co. on a casino building, 84 x 107 feet, in North Main street, Springfield, Mass., opposite its factory. The building, which has been contemplated for some time, will be a rest and recreation center for the employees of the company. It will represent a cost of $18,000.

The structure will include a rest and game room, a dining hall, 60 x 60 feet, and a kitchen and serving room connected with the dining hall. The basement will be fitted with bowling alleys. Broad piazzas will run on the north and south sides.

Velie Adds to Factory Space.

The plant of the Velie Motor Vehicle Co., of Moline, Ill., is undergoing enlargement to the extent of 120,000 square feet; the addition to the plant consists of a two-story building.

"SIX" ADDED BY MOON AND ONE "FOUR" MODEL DROPPED

"Streamline" Body and Delco Electrical System Mark New Model Selling for $2,150—Remaining "Four" Unchanged.

With one "four" less than it had last year and a new "six" that it never had before, the line of cars produced by the Moon Motor Car Co., of St. Louis, Mo., hereafter will be built around two chassis—one of them a light "four" and the other a light "six"; a larger four-cylinder model which was equipped with a 4 x 5¾-inch motor, has been dropped and, except for a two-inch increase in wheelbase length and the substitution of the Delco electric starting, lighting and ignition system for the Wagner apparatus used last year, the remaining four-cylinder chassis is practically unchanged. Quite as a matter of course, however, its body has been practically rebuilt and now presents a more rakish appearance that scarcely is suggestive of its larger size and its roomier tonneau. The price remains the same—$1,750—for touring, torpedo, speedster or roadster models. The "six" is brand new all the way through, of course, and lists at $2,150 with five-passenger touring body and at $2,225 with a body to accommodate six or seven passengers. Like the "four," it is equipped with the Delco electrical apparatus.

The whole official title of the new "six" is "Light six-50 Streamline," and the title is more than ordinarily suggestive of the car itself. Thus, for instance, the car undoubtedly is light—for a "six"; fully equipped for the road, it tips the beam at just 3,840 pounds, which, considering the capacity of the motor—namely, 58 horsepower at 1,800 revolutions—gives a ratio of power to weight that seldom is approached in the larger six-cylinder cars. The motor is of the L-head type, in contradistinction to the motor in the "four," which is of the T-head type, and has its six cylinders cast in blocks of three; the bore and stroke are 3¾ inches and 5¼ inches, respectively.

The "streamline" in the title applies to the body, of course, and is intended to convey the idea that the lines of the hood and the sides have been nicely "blended" at the dash so as to present a beautiful appearance combined with a minimum of wind resistance. Instead of a convex curve at the skuttle, the long overhang is concaved to a marked degree and the effect of smoothness is carried further back by the unbroken sides, the latchless doors and the slightly domed fenders. Following the trend of the

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times, the side lamps have been eliminated and the windshield is built in place without the use of stays or strut rods of any kind. Tires are carried at the back of the tonneau and the running boards are perfectly clear. The steering wheel is at the left side and the control levers are in the center of the footboard.

For the transmission of power, Moon engineers rely upon a smooth-acting multiple disk clutch housed within the flywheel, a four-speed selectively operated gearset in which the shafts are mounted on imported annular ball bearings and the orthodox shaft with bevel drive on the rear axle. The rear axle, by the way, is of the full-floating type and is Timken mounted. There are two sets of brakes, of course, mounted on rear wheel drums and the wheels, all around, are shod with 35 x 4½-inch tires carried on demountable rims; the wheelbase of the standard model is 129 inches; the tread may be either 56 inches, or 60 inches for Southern roads.

In the remaining "four," the motor dimensions have not been altered; they are 4½ x 5, though by reason of a number of detail refinements the motor has been induced to give off considerably more power than it has given off in the past. Instead of the four-speed gearset with which the "six" is equipped, the "four" has a three-speed gearset though the remainder of the essential elements are the same as those in the "six," allowing for a certain difference in size of parts. The wheelbase is 118 inches, instead of 116, which was the measurement last year, and the wheels are shod with 34 x 4 tires.

The equipment for both cars is approximately the same and is as follows: Delco electric lighting, starting and ignition apparatus; windshield; top with Collins side curtains; Taylor power inflator; electric horn, and the usual complement of tools, spare parts, etc.

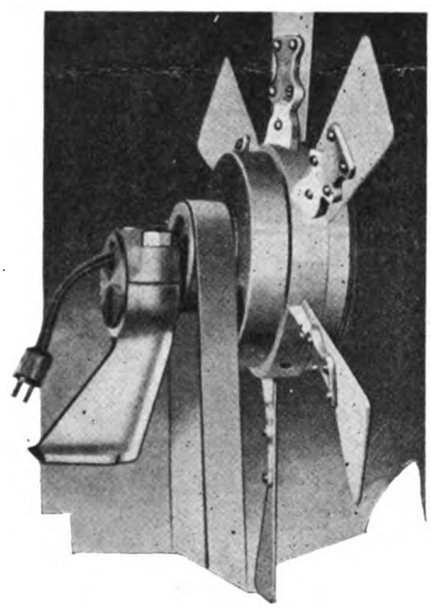
Now a Substitute for Inner Tubes.

Departing from the liquid and semi-liquid tire fillers which have become almost epidemic within recent months, "Bettern-Air," a German substitute for inner tubes, has made its appearance on the American market, the rights having been acquired by The Galvanizing Co., of Philadelphia. "Bettern-Air" is a chemical composition made in rolls of various sizes and when cut to the proper length is inserted in the casing and a wedge piece placed at the point where the two ends meet. It is claimed to have stood two years practical tests and it is in its favor that it is not being exploited by too extravagant claims. While not capable of high speed, it is declared that the compound is as resilient as air for speeds up to 30 miles.

MAKING THE FAN GENERATE BREEZES AND ELECTRICITY

Kemco Device Incorporates Generator as Hub of Fan — Mounted and Driven as Single Part by Fan Belt—Constructional Details.

Like many other things that are inconspicuous both as to size and location, the Kemco fan type electric generator, which is made by the Kouyoumjian Electric & Mfg. Co., Cleveland, Ohio, and already has been briefly described in Motor World, embodies more interesting features than appear at a casual inspection and is the result of no small amount of scientific experimentation. The device consists of a



KEMCO FAN-TYPE DYNAMO

diminutive dynamo which forms the hub of a scientifically proportioned fan, the whole affair weighing but 10 pounds. It is designed to be driven by the ordinary fan belt and takes the place of the ordinary cooling fan.

The generator is made proof against the intrusion of dust—which means that nothing else can get in—and there is not an unprotected opening in the machine. Within the outer casing and forming part of it, is the armature, which, reversing the conventional arrangement, rotates outside of the field magnets, which are in the center. There are two conspicuous advantages of this arrangement. Centrifugal force tends to hold the armature windings the more firmly in place, as they are, of course, on the inside of the ring, and the rapid movement tends to dissipate heat, which usually is more freely generated in the armature than in the fields.

It is claimed that one set of brushes will give approximately 50,000 car miles, due to the fact that they are thoroughly protected from dirt and that the wearing surfaces are very large. Plain round carbon is used and in case of emergency it is said that a piece of electric light carbon can be used for brushes.

The electrical characteristics of the little generator are admirably suited to the way in which it works. It has a high output at comparatively low speeds, but the output falls off as the speed increases beyond the critical point. Thus when the generator is used, as is intended, for battery charging, the car that runs around town at a moderate speed will have its charging properly done, while the speeding of a machine will not result in overcharging.

A very small ammeter is furnished with the generator, and one of its offices is interesting. If the fan belt becomes loose enough to slip seriously, the current output will, of course, drop off and the ammeter will indicate the fact. In other words, the ammeter is an efficient tell-tale on the belt, which can be given proper attention at the proper time. No increase in belt size is necessary.

The fan, which is an integral part of the Kemco generator, is built on scientific principles and, despite the solid center, is said to be more efficient than the average fan of ordinary construction. In fact, the Kemco claim is that the solid center is conducive to greater efficiency by preventing eddy currents and back draughts of air.

Here's a Top that Disappears.

Where to put the top when it is down and how to stow it away so it will look as unobjectionable as possible have worried more than one automobile body designer, and with the object of eliminating the source of worry the Automobile Roll Top Co., of Milwaukee, Wis., in which P. C. Avery is a principal, has brought out a top on the roll-up principle. When the top is up it looks not unlike any other top, with the exception that the only bows are two on each side, one extending upward from the side of the seat with a forward inclination and the other being an extension of the windshield brace, the brace being anchored back of instead of in front of the shield.

When it is desired to put the top down the bows at the sides of the seats are made to disappear into the body, those on the windshield are detached and stowed away in any small space while the top rolls into an enclosed roller at the back of the front seat. The roller is not objectionable in appearance, whether the top be up or down, and operates by a spring which draws the fabric in when the top is being put down.

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& M PREPARING TO BUILD CARS; FACTORY IN DETROIT

troebel and Martin to Produce Four Models from $2,485 to $3,500—All to Be "Sixes" with Left Drive and Center Control.

Having recently acquired a factory building at 1900 Mt. Elliott avenue, Detroit, the ewly organized S & M Motor Co. is making ready to enter the industry in real arnest. The car will be styled the S & M, aking its name from the two principals of he company—Edward D. Stroebel, a New ork furniture manufacturer, and Walter . Martin, at one time Cadillac agent in ew York, who, however, is now a resident of Detroit.

The car will be made in four models. The unabout will list at $2,485, a five-passenger touring car at $2,485, seven-passenger touring car at $2,535, and a limousine at $3,500. Continental six-cylinder engines, 3¾ inches bore by 5¼ inches stroke and yielding 58 horsepower at 2,000 revolutions, will be used. The components of the car will include Bosch dual ignition, Timken front and rear axles, wire wheels with Timken hubs, Warner four-speed transmission, Gemmer steering gear, Rayfield carburetter, Mayo radiator, Parish & Bingham frames, Spicer universal joints, Firestone tires and an electric engine starter.

The car will have left-hand drive, center control and will be fully equipped. The wheelbase will be 130 inches, the weight of the car 3,250 pounds and the S & M will have one horsepower for each 57 pounds. The springs are of three-quarter elliptic in the rear, one-half elliptic in the front, with underslung rear springs.

Forbid Curb Pumps in Waterloo.

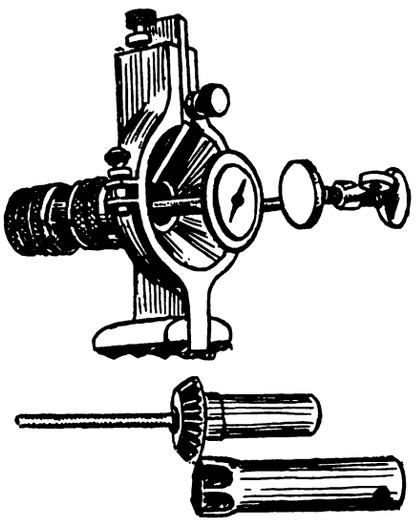
Placing an oil pump at the curb in Waterloo, Ia., is obstructing the public highway, according to the opinion of the authorities and the ruling of the courts in that city; a conviction has been secured against one garage as the initial step in a campaign for the removal of all such devices; this first conviction was against the Iowa Auto Co., of 510 West 5th street, of which A. F. and F. C. Meves are the proprietors. There are about eight garages and similar establishments which will be hit by the ruling.

Spokane Men Plan Downtown Garage.

As a solution of the parking problem which is causing inconvenience for motorists and the authorities in many cities, a group of business men in Spokane, Wash., proposes to erect a downtown garage which will relieve street congestion and facilitate service to car owners; a feature of the project is a press-the-button system wherewith owners can call their cars from their office desks and have them ready and waiting in front of the office buildings when desired.

Tool that Facilitates Valve Grinding.

Valve grinding is laborious work at best, and even when painstakingly and conscientiously carried out, often leaves much to be desired, for it is not always possible, even if the operation is long continued, to rid valves and seats of ridges and pitting which sooner or later is bound to result from the corrosive action of carbon deposits. Gradually, it is being realized by those not in the trade, as it long has been



G. B. VALVE SETTING TOOLS FOR BOTH CYLINDER AND VALVE SEATS

realized by those in the repairing and overhauling business, that by far the better way to treat valves that are in bad condition is to reseat them, and for this purpose there has been placed on the market by the G. B. Sales Corporation, of 1790 Broadway, New York City, a handy tool styled the G. B. valve tool.

In its simplest aspect it consists of an adjustable receptacle that will hold valves of various sides, and a cutting tool so arranged that when the valve is inserted the cutting edge trims the seat to exactly 45 degrees. One of the unusual features of the device is that the cutting tool can be removed and sharpened, or replaced, quite easily, and when reinserted, it cannot be set at the wrong angle. The remainder of the equipment consists of the usual rose cutter for reseating the cylinder valve seats, and a suitable socket wrench to make its manipulation easy. So that the tool will stand hard usage without losing its efficiency, it is drop-forged and case-hardened and the seat cutters are made of oil-tempered high-speed tool steel. Special apparatus is not required to sharpen them.

NO RADICAL FEATURES IN CLEVELAND LIGHT TRUCK

Only Standard Construction Revealed by Four-Cylinder Motor and Orthodox Transmission—To Sell at Price of $1,250.

There really is very little in the construction of the Cleveland truck, for which C. D. Paxson, who is well known in the trade and whose offices are located in Cleveland, Ohio, has been appointed the general sales agent for the United States, that is distinctive of itself alone, for the vehicle is a standard one all the way through and conforms quite thoroughly to generally accepted truck practice. It is a light vehicle in reality, as far as capacity goes, though its price, which is $1,250, is no indication of the sturdy manner in which it is built. Several types of bodies are supplied, to suit the requirements of the individual purchaser, the vehicle that lists at $1,250 being equipped with an open express body and providing ample space for the carrying of a considerable quantity of light merchandise.

Conforming to the general tendency in the design of vehicles intended for work other than the hauling of very heavy loads, the motor is placed forward under a hood after the manner of the pleasure car, where it is instantly accessible. The steering gear and control levers are placed at the right side and the driver's seat is equipped with a substantial folding top.

In selecting a motor, cognizance has been taken of the necessity for providing ample pulling power at all speeds, and to this end a four-cylinder vertical motor of the valve-in-the-head type is employed. The valves are inclined at 45 degrees in the cylinder heads, which construction, incidentally, does away with the necessity for one cam shaft and eliminates the usual push rods and tappets. The single camshaft is driven from a vertical shaft which, in turn, is actuated by the crankshaft. Cylinders are cast in pairs with liberal water jacketing and further providing for simplicity, the cooling water is circulated on the thermo-siphonic principle. Sparks for ignition are provided by a combined low-tension magneto and battery system operating through a dash coil. The lubricating system is of the constant level pump-over type, and, in addition to keeping the cylinders and main engine gearings copiously supplied with oil, also lubricates the clutch and the gears in the change-gear mechanism.

It is important in any commercial vehicle, no less than it is important in a pleasure car chassis, that the motor and the gearset shafts be positively maintained in proper

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alignment, and for this reason the motor and the gearset in the Cleveland truck have been combined in a single rigid unit; hence there is no possibility of shafts getting out of alignment. The clutch is of the multiple disk type and runs in an oil bath, and the change gear mechanism, which is selectively controlled by means of the usual hand lever, provides three speeds forward and reverse; both transmission shafts are mounted in annular ball bearings.

Positively to ensure against sagging or breaking, the frame is made exceptionally strong and is mounted in front on semi-elliptic spring members and in rear on full elliptics, thus providing for easy riding qualities when the truck is loaded as well as when it is light. The weight of the vehicle complete is 2,600 pounds, and the wheels are shod with pneumatic tires measuring 33 x 4½ inches both front and rear. The drive is through a straight shaft to bevel pinions on the rear axle, which is of the floating type. The front axle is a substantial I-beam drop forging with the tie rod at the rear and the steering arm above the axle. The wheelbase of the standard model with 160-inch frame is 120 inches, and the tread may be either 56 inches, which is standard, or 60 inches.

The standard equipment that goes with the vehicle and is included in the price consists of the driver's top, three oil lamps, and the usual complement of tools, jack, tire repair kit, spare parts, etc. The trimmings are finished in nickel plate and black enamel.

Burning Insured Car Means 25 Years.

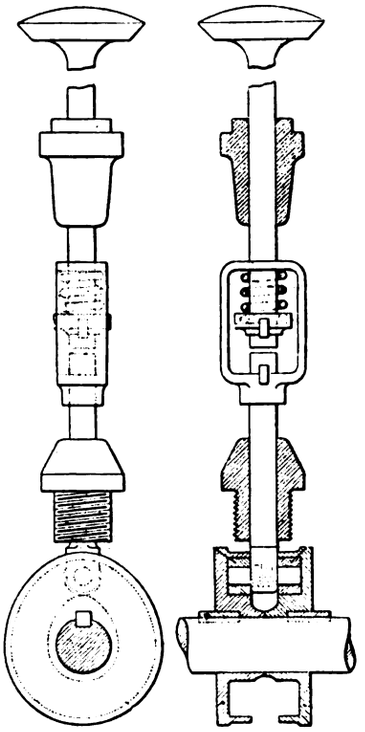
Setting fire to an insured automobile in the State of New York now carries possibilities of 25 years in jail, according to an amendment to the penal law which became effective Monday, 1st inst. If it isn't insured the penalty may be 15 years.

The revised measure was part of a large number of recent acts of the Legislature which became effective on September 1, and while it alters the situation insofar as the crime of arson is concerned it is not a new idea in law but is a rearrangement of the code. Under the laws of 1909, burning vehicles, insured or uninsured, was arson in the third degree, but the new law says that anyone "who wilfully burns, or sets on fire, a vessel, car or other vehicle, or a building, structure or other edifice, which is at the time insured against loss or damage by fire, with intent to prejudice or defraud the insurer thereof, is guilty of arson in the second degree." The second degree penalty is not more than 25 years in state's prison.

The burning of a car and the other properties included in the second degree classification "under circumstances not amounting to arson in the first or second degree" constitutes arson in the third degree. Third degree carries a maximum penalty of 15 years and heretofore both these offenses were in the lesser classification.

Valve Gear That Eliminates Noise.

Valve silencing with tappet valve motors, generally is construed to mean the positioning of plates or sleeves which, although they do not prevent the noises being set up, do render the noise less audible by confining them to the pockets which the enclosures form. The French idea as exemplified in the mechanism of the Vedry motor,



VEDRY VALVE MECHANISM

shown in the accompanying illustration, embraces the elimination of the noises and not the muffling of them.

The cam is made in two sections, each of which is slotted according to the correct contour, so that when the two halves are brought together on the camshaft the roller on the lower end of the tappet works in the slots. Thus the movement of the tappet is positive and is not at any time dependent upon the strength of a spring. The spring which serves to return the valve to its seat is housed in a yoke which is pinned to the upper portion of the tappet and through the upper part of which the valve stem works. The spring is so arranged that it is in tension when the valve is lifting, so that the valve leaves its seat before the tappet comes into contact with the valve stem, and is in compression when the tappet has been lowered by the action of the cam so that the valve is held firmly upon its seat. The cam construction, it is claimed, absolutely eliminates the noise due to the tappet striking the cam upon its return under the action of a heavy spring which is especially objectionable at high speeds, and the slighter taps which are occasioned by the contact of the tappet and valve stem are eliminated by the spring mounting.

Advantages of Short Wiring Circuits.

In wiring for any kind of electrical circuits, it should be borne in mind that the shorter the wires (regardless of their diameter) the less will be the loss of voltage due to resistance. It is well, too, to remember that lamps which light brilliantly when placed directly across the terminals of a battery will light less brilliantly at the end of a circuit no longer than the length of an ordinary touring car. Obviously, the larger the diameter of the wire, the less will be the resistance offered by it.

To Remove Dust from Upholstery.

It is doubtful if there is anything that will remove with greater certainty and less labor the dust that collects in the tufting in leather upholstery than the common or home variety of vacuum cleaner. If the broad, flat nozzle with which such devices are equipped is removed, the hose can be pushed well down into the tufting and the last vestige of dust in the upholstery will be sucked out.

When Two Gaskets Are Better than One.

It is an excellent plan when making a paper gasket to make two of them, one from the place the gasket is to fit and the second from the first one. An emergency gasket then will be always on hand and it can be put in place in a hurry if necessary. Besides, it is much easier to make a gasket from a gasket than it is to make one from the part to which the gasket is to be fitted.

When Heating Small Parts in Lead.

If finely broken hardwood charcoal is sprinkled over the top of molten lead in which small tools are to be heated for hardening, the litharge, which accumulates on top of the lead, will be prevented from sticking to the tools. As it is not always easy to remove this substance, time and labor can be saved by using charcoal in this work.

Bearings that Encourage Neglect.

Ball bearings do not require the copious lubrication that is called for by plain bearings, or to a lesser degree by roller bearings. This does not mean, however, that lubrication can be neglected or that it may be done carelessly without harm resulting to the bearings.

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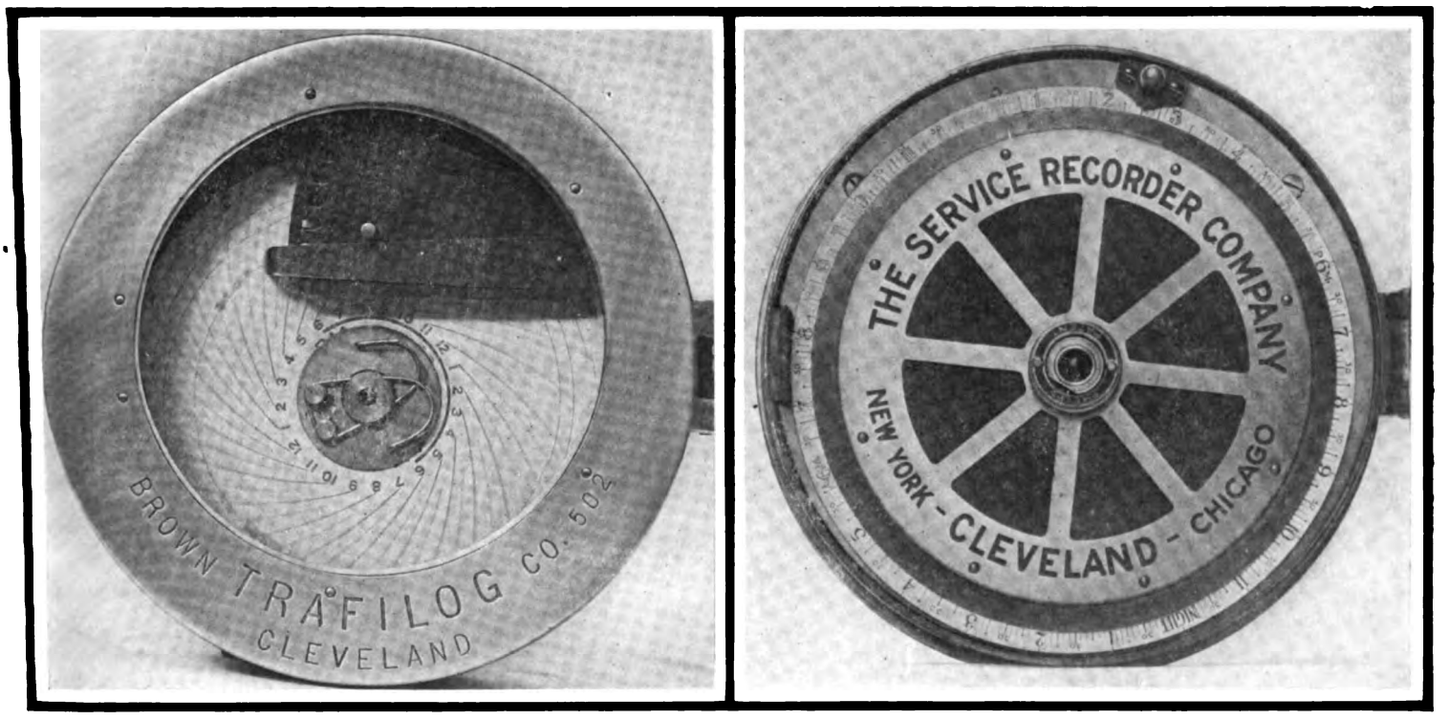
DEVICES THAT WATCH THE TRUCK AND DRIVER

How Profit Leaks May Be Stopped With Instruments That Write Down the Movements of Vehicles—Wherein One Grocer Failed and Why—Operation of Several Different "Recording Clocks" Made Plain.

"Let me cite an example of a grocer I knew who worked in curves—and failed," says a writer in one of the popular periodicals in giving just one instance of the little things that are really big things and that work havoc with even the most carefully worked-out plans. "He had four delivery wagons, one of which delivered goods at my house. A block below my place was a field where the boys of the neighborhood played ball. The driver of this particular wagon was fond of the game, and often he would leave his vehicle in front of my house for an hour while he joined in the sport. He kept this up all summer and still held his job! The reason he held it was this: The boss did not know!

"Now, why did not this grocer know? Because he was not running his business on engineering principles. He had no standards. He did not know how long the deliveries on this young chap's route should have taken. Had he reduced the thing to engineering terms, he could have cut out this wagon absolutely. The other three wagons could have done the work easily."

Evidently, the author of these statements had a clear insight into business principles. His aim was to promote efficiency, for in advocating the laying off of one vehicle out of four he would increase the efficiency of the other three. In other words, he would work the three remaining vehicles a great deal nearer to their maximum capacity; their loafing time would be turned into paying time; the expense of one vehicle would be eliminated.



EXTERNAL VIEWS OF TWO VEHICLE MOVEMENT RECORDERS, NEITHER OF WHICH CONNECTS TO RUNNING GEAR

No Excuse for Resting the Truck.

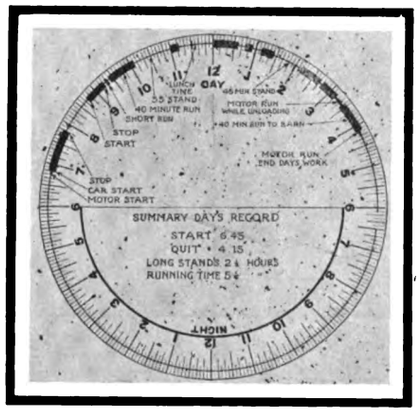
It is not stated whether these particular delivery wagons were horse drawn vehicles or whether they were propelled by gasolene. Nor does it matter greatly, for the principle remains the same. If they were horse-drawn there might have been some conceivable reason for the driver of that lone wagon laying off for an hour to play ball. The horse might possibly have been tired, though this is unlikely. Still, it is not possible to work a horse continuously without a stop now and then to rest him up a bit. But if these four vehicles has been motor propelled there was no conceivable excuse for the delay, for motor trucks do not tire and nothing has been said about derangements of their internal economy. The driver simply stole time, and in stealing time he also stole profits. He might as well have "tapped the till" when the grocer turned his head. The method would have been just as certain to show in the monthly balance.

This stealing of time by employes is just one of the things for which the user of motor delivery vehicles must calculate and allow. And there are any number of ways in which it can be done without the knowledge of the employer. Any employe, despite how well he is recommended, and despite his intended honesty to his employer, may soothe his own conscience if he finishes his allotted daily task on time and pulls into the garage at night at the appointed hour. He has been doing the same amount of work every day—starting and finishing at the same time and delivering the same amount of merchandise—and on the face of it the proceeding seems perfectly all right. To the driver, the proceeding is all right, for has he not finished his work?

But the employer is by no means sure just how the work actually was finished.

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He does not know whether the driver forced his truck in the morning so that he might lay off in the afternoon for an hour. Suppose the work laid out for the driver and truck had been computed by an expert and laid down as the greatest amount of work that could be expected from the vehicle if maximum efficiency was to be expected. Maximum efficiency, be it added, means that the maximum work compatible with the minimum wear and tear and expense must be turned out. It means, in other words, that the vehicle must adhere to a certain well-defined schedule.



TRAFILOG RECORD SUMMARIZED

Lapses Which the Devices Overcome.

But suppose the driver of the vehicle knows that he can exceed the schedule; suppose he knows that by driving at 18 miles an hour instead of 16 miles an hour, and occasionally pushing the speed to, say, 20 miles an hour, he can finish his morning's work half an hour earlier. That means he can lay off for an hour and a half for dinner and still finish his work on time. It means, too, that he can gain another half hour in the afternoon if he is so minded.

With all due respect for the average motor truck driver, who generally is honest—even if he does like baseball—the fact remains that practices of the kind are easily possible in a great many cases. It is too well known to require reiteration that when the speed of a vehicle is pushed past a certain maximum that, it is known, will yield highest efficiency, the vehicle suffers. Next to overloading, overspeeding always has constituted one of the problems with which the motor truck user has had to wrestle. Part of the problem, it is true, has been solved by the speed governor, but there are those who prefer not to use such devices for reasons best known to themselves, and even where they are used there are any number of tricks whereby this little watchdog of the treasury can be put on his back temporarily with all four feet in the air, figuratively speaking. Hence, the problem, as such, still exists.

It is this problem that the dealer can solve for the owner perhaps better than the owner can solve it for himself, for the dealer knows of its existence, whereas the owner may never have heard of it. By tactful suggestion, the dealer can bring its existence to light, and by pointing out the means to its solution can cement his friendship with the prospective owner. Manifestly, it is to the dealer's advantage to see that the vehicles for which he is "boosting" are operated at their maximum efficiency. His efforts should lie not only in the mere selling of the vehicle. They must include service as well, and the service can be started at the outset by pointing out the solution to this really big problem. If he can show his prospective purchasers that the vehicles will pay—and they will pay in nine cases out of the proverbial ten provided they are efficiently and properly run—little else is required to cinch the sale.



SERVIS RECORD CHART

How to do it? How to go about solving this problem, or of pointing out to the prospect how it may be solved? There are any number of devices on the market—simple and certain devices—that have been designed for just this purpose. They are not all the same nor do they work on the same principle. But they all indicate invariably just how long a vehicle has been in service, how long it was "laid up"—for dinner or for baseball—and some of them indicate, as well, the speed of the vehicle at any instant of its motion.

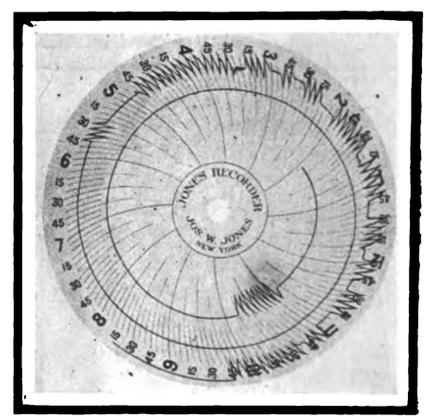
Trafilog That Works Like Pedometer.

Among these various devices, the Brown Trafilog, which is produced by the Brown Trafilog Co., of Cleveland, Ohio, is one of the simplest, though despite its simplicity it may be relied upon as an infallible tell-tale of the doings of a motor truck—or a horse-drawn one, either, for that matter—and its driver. The internal mechanism of the device is completely sealed and has no connection with the running gear of the vehicle. Briefly, it operates by the vibration of the vehicle itself and, lest it be assumed that on a very smooth boulevard the vibration would not be sufficient to cause a record to be made, it is well to add that repeated tests have shown that no matter how smooth the roadway may be, the movements of the veheicle still are recorded. The external appearance of the device is shown by the accompanying illustration, and the record it produces is shown by another picture.

Both the construction and the operation of the Brown Trafilog are so simple as scarcely to require description. The device itself is operated by clockwork which is wound up once every day when the chart record is romoved for filing. The chart consists of a sensitive disk of paper against which there presses a sharp point which is attached to the outer casing. The chart and the clockwork are partly suspended within the casing, so that the vibration of the vehicle causes the chart to move with the result that a series of marks are made on the chart. As the marks are made by the removal of part of the sensitive coating of the paper, there is no possibility of the record being tampered with.

Makes Accurate Record of Movements.

In operation, the needle which presses against the chart will trace a very fine line during the time the vehicle is at rest. Instantly the motor is started, however, the vibration causes a slightly thicker line to be traced, and when the vehicle is set in motion the line becomes a broad band which is unmistakable. All of these marks are shown by the accompanying illustration of one of the charts. This picture itself, which shows a chart taken from a vehicle in service, makes very plain exactly how much work the truck did in the interval between the beginning of the day's work and its finish. It shows, for instance, that between 10 and 11 o'clock the vehicle was permitted to stand idle just 55 minutes. The driver may have been playing ball!

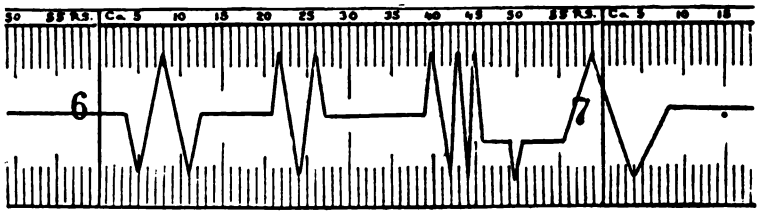


COMPLETED JONES RECORD

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ıe charts for the Brown Trafilog are ıntly changeable and are supplied in types. In one type the 24 hours are led off into five-minute intervals; in other type, which is designed to give a rd covering a full week, the hours are led into 15-minute periods.

ıe Servis Recorder, which is manufac- d by the Servis Recorder Co., of Cleve- , Ohio, is somewhat like the Brown, gside of which it is shown in the ac- panying plate. It differs from the wn, however, in the important respect



TAPE MADE IN SERVICE WITH SPEEDOGRAPH INSTRUMENT

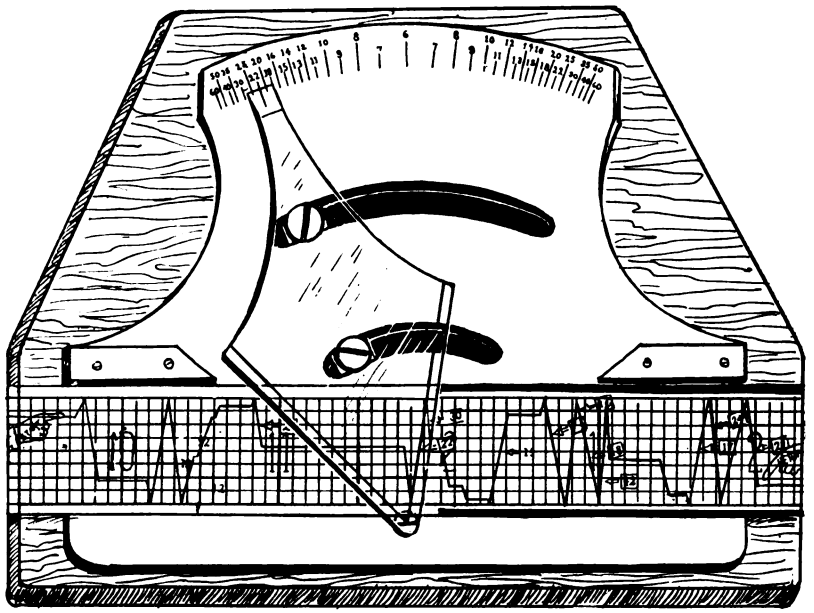
it operates by the oscillation of the cle instead of by vibration. In other ls, vibration caused by the running of motor, or by loading or unloading y merchandise, causes no record or a rd so faint that it cannot possibly be used with the record made by the vehi- n motion. Like the Brown, the Servis rder is devoid of all outside connec- ; and has no flexible shaft or other con- ing link with the running gear of the cle to which it is attached. Though the ument is very easily attached or de- ed it is so arranged that it is absolutely ssary to disturb the record in order to). In other words, the device cannot be ı off the vehicle temporarily without rd of that fact being made on the chart.

ruck's Work for a Day Recorded.

e accompanying reproduction of a taken from a Servis recorder shows the chart was placed in the instru- at 3:10 A. M.—probably by the night ge attendant. At 6:15, the truck was n 15 minutes from the garage to the and at 8:45 the vehicle was started on ıorning trip to the suburbs, returning :15. The afternoon trip began at 1:15 asted until 4:50, when the truck arrived e garage, and between 4:50 and 5, two moves—placing the truck for the —are shown. The fine line from 5 :k on is conclusive evidence that the le was undisturbed until the chart was ged at 12:45 A. M. From the record of hart, it is at once apparent that the r made only four stops of over five :es in the morning and but one in the ıoon, and that both he and the truck in service more than 10½ hours. No ılaying there!

The record also shows that for nearly 2½ hours the truck stood idle before it finally got away from the store in the morning, and though this time may have been all occupied in loading the vehicle, it is plain that there was much room for improvement in loading operations. As a matter of cold fact, the loss of time demands investigation, and if the result of the investigation can be made to cut out some of this lost time, the efficiency of the vehicle will be increased.

The Recordograf, which is produced by the Delivery Supervision Co., of New York City, is radically different from either of the two devices that have been described, for in addition to recording the length of time the vehicle is in use and the time it is idle it also makes record of the distance traveled and the speed of the vehicle at any particular moment. Also, it is operated in part by clockwork and in part by the movements of the vehicle itself through the intermediary of a flexible shaft connecting with one of the wheels. The appearance of the device is shown by the accompanying illustration, which shows the cover opened exposing the record tape and the stylus.



RECORDOGRAF TAPE AND DEVICE USED FOR MEASURING SPEEDS

The mechanism of the Recordograf is not nearly as complicated as the results obtained would seem to indicatae. The recording tape is divided longitudinally by fine lines indicating miles; the width of the tape represents a distance traveled of two miles and subdivisions indicate quarter miles. The hours are indicated on the tape by vertical lines and the tape is wound up on the drum by clockwork at the rate of a complete revolution every six hours.. Pressing against the tape there is a tiny pencil, or stylus, which is moved alternately up and down across the tape by a cam mechanism actuated from one of the wheels through the flexible shaft.

When Truck Moves Pencil Moves.

Thus, for instance, if the vehicle remains stationary, the pencil will travel along the tape a distance corresponding to the length of the stop in hours and minutes. Instantly the vehicle is set in motion (either backward or forward) the little pencil commences its travel either up or down and as the movement of the tape on the drum is constant, the line traced by the pencil will be at an angle to the vertical hour lines. It is this angularity of the pencil line which permits readings of speeds to be taken and the method of taking the readings scarcely is less interesting than the making of the record itself.

For this purpose there is used the device which is shown by the accompanying illustration and which has been especially developed for the work. When the tape is placed in the device and the hair-line placed over any one of the oblique record lines traced by the pencil, the speed of the vehi-

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cle is indicated on the scale by the pointer. In the illustration, for instance, the hair-line is over an oblique line which indicates that between 11:50 and 11:55 A. M. the vehicle to which the device was attached was traveling at a rate of 22 miles an hour.

Indisputable Evidence Afforded by Tapes.

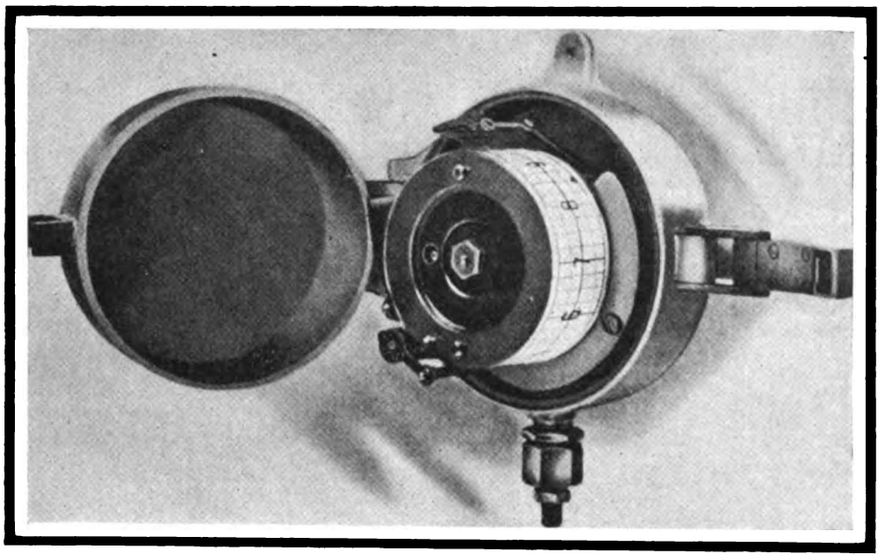
Just how valuable is this feature of being able to tell the speed of a vehicle at any time is well revealed by one case in point. A taxicab chauffeur whose vehicle is equipped with one of these devices was arrested and charged with driving at 24 miles an hour, whereas examination of the record tape showed that at no time during the 12 hours preceding his arrest had the speed of the vehicle exceeded 20 miles an hour. The evidence of the tape was allowed in court and the chauffeur discharged. In another instance, witnesses declared that a heavy truck which struck and killed a boy while rounding a corner was running at more than 20 miles an hour at the time of the accident. The record tape showed, however, that at no time during the day had the speed of the truck exceeded 12 miles an hour and that at the time of the accident it was actually making five miles an hour! The case was thrown out of court.

Simplicity of Computing Vehicle Speed.

The Speedograph, which is produced by the Recording Speedometer Co., of Newark, N. J., is another vehicle movement recording device which indicates the speed of the veheicle as well as the time in motion and at rest and the distance traveled. The method, however, is slightly different from the method used with the Recordograf. With the Speedograph, the tape is divided only transversely and the divisions represent minutes. The tape is moved by clockwork at the rate of three inches an hour. The pencil is moved up and down three-quarters of an inch for every half mile traveled by the vehicle. Hence, knowing these two factors, it is comparatively simple to figure the speed of the vehicle at any point in its travel.

In the section of record tape which is produced herewith, for instance, the record makes plain that the vehicle started at 6:03 and ran 1½ miles at the rate of 10 miles an hour (or one mile in six minutes). From 6:12 to 62:1, the vehicle was standing; from 6:21 to 6:27 it ran 1½ miles at the rate of 15 miles an hour (or one mile in four minutes); and from 6:27 to 6:39 the vehicle was standing; from 6:39 to 6:42 it moved at the rate of 15 miles an hour for ¾ of a mile, and then at the rate of 30 miles an hour for 1⅞ miles; at 6:46 there was a three-minute stop, then a quarter-mile run at 10 miles an hour, then a five-minute stop and then a run of 1⅛ miles at six miles an hour (or one mile in 10 minutes); the final stop was made at 7:08. Thus, the movements of the vehicle during the whole of the time it was supposed to be in use are recorded and the record is instantly available.

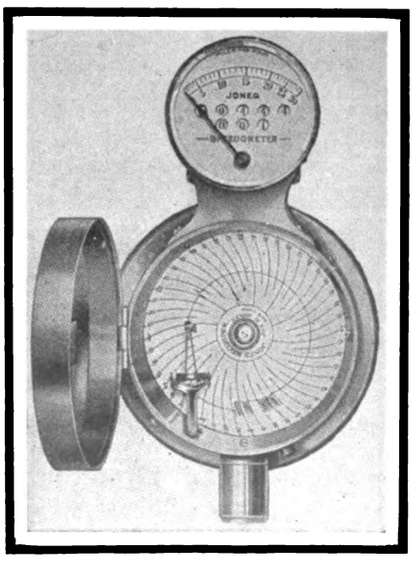
Operating on practically the same principle as the Speedograph, the Jones recorder, which is produced by Jones Speedometer of New Rochelle, N. Y., differs from the latter principally in that the record is made on a circular card. The card is moved by clockwork, just as the tape in the Recordograf and the Speedograph is moved, and the pencil is moved by a cam mechanism operated from the wheels through a flexible shaft. While the vehicle is standing, therefore, that fact is recorded by a continuous line, for the record card travels constantly beneath the stylus. When the vehicle is set in motion, however, the stylus moves upward and then downward, each zig-zag representing one-half mile of travel of the vehicle. Hence, it is simple to compute the speed of the vehicle by counting the number of zig-zags in any given period.



RECORDOGRAF WITH COVER OPEN SHOWING TAPE AND STYLUS



SPEEDOGRAPH SHOWING TAPE



JONES MOVEMENT RECORDER

Real Necessity of Recording Instruments.

That it is the idle time of commercial motor vehicles, rather than the running time, that makes for black marks on the ledger, is pretty well established, and in view of this fact it is nothing short of amazing that both users and makers have not long since insisted upon the equipment of their vehicles with some sort of a device that will record permanently the movements of the vehicle when it is away from the garage and out of sight of the owner. Granting that employes are honest, the fact remains that they also are human, and where there is a ball game, or anything else to attract the attention of the driver, there is likely to be delay—and delay spells

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ruined efficiency and increased expense of operation. With the addition of some sort of a vehicle movement recording device, the owner is enabled to compute accurately the worth of his rolling stock in figures of delivery efficiency, and, like the grocer who had one wagon too many, he may find it possible to cut down expense fully one-fourth by the simple expedient of eliminating one-fourth of his rolling stock.

Black License Tags for Pennsylvania.

Pennsylvania's automobile license tags for 1914 will be black with white letters and figures instead of olive with white letters, as at present, and there will be six classes of tags issued. Pleasure cars other than those operated by dealers are in the first class; commercial vehicles are in the second class, with five sub-divisions according to weight; dealers' vehicles come in the third class and the tags will be distinguished by the letter X; traction engines constitute the fourth class, the plates for them carrying the letter E in front of the number; trailers, or vehicles that are being hauled, constitute the fifth class, and their plates will have the letter T before the number; motorcycles are in the sixth class by themselves.

Arrested as Thief of $50,000 of Cars.

Warren Rolston, alias W. T. Brown, is under arrest in Chicago, charged with having stolen a score or more of cars, the value of which is about $50,000; it is also alleged that nine months ago, while being chased by the police, he ran into and killed a man at the Rock Island Railroad and 18th street. He served six months in jail for that escapade and now is accused of having attempted to elope, three weeks ago, with a young woman whose parents, however, intercepted the couple. Last week, her affection having turned into an intense dislike, she acted as a decoy and aided the police in apprehending the youth. He is said to have numerous cars stored in various garages in Chicago.

Electric Tractors for Street Railway.

Among the many indications of the interest that is being taken in the possibilities of front drive is the fact that the New York City Railway Co. is having 14 electric trucks built in which the tractor principle is employed. The machines will be used for all sorts of trucking and the service is such that they will be thoroughly tested out in every way. The drive is by means of Couple-Gear wheels, which are of the disk type with electric motors enclosed and driving through internal gears. The wheels are being built under the bodies by the General Vehicle Co., which is acting merely as an assembler of the parts.

TRACING TROUBLE IN WIRES AND APPLYING THE REMEDY

Usefulness of the Trouble Lamp in Locating Motor and Generator Faults—Testing Armatures for Short Circuits.

In an electrical machine, motor or dynamo, in which the winding is insulated from the cores upon which the wire is wound, it is an easy matter to test for a ground—that is to say, an accidental contact between the copper of the winding, or any other part of the circuit, and the cores or the frame of the machine. Bearing in mind that there should be absolutely no flow of current from the normal circuit to ground, it is clear that if by any means a flow of current can be detected which cannot take place without in some way getting through the insulation, there must be an insulation fault somewhere, or a contact made in some abnormal way.

A simple test is to take a small electric lamp—a trouble lamp of the ordinary kind, with a battery as the source of current—and cut or disconnect one of the wires that feed it. Apply one end of the cut wire to some exposed part connected with the winding, such as a brush holder, and the other end of the wire to the frame of the motor or dynamo, as the case may be. If there is a ground the lamp will burn, for the current will pass through the winding, escape through the leak, wherever it may be, and return through the other wire of the testing lamp.

If the lamp burns in such a test it indicates, but does not locate, a ground. To find out if the trouble is in the armature, remove the brushes so there will be no normal connection between the armature winding and any other part of the circuit, and apply one end of the testing lamp wire to the commutator and the other to the armature shaft; run the wire all round the commutator. If the lamp burns, there is an armature ground. If not, there are the fields to be tried. The wires should be disconnected so that each field will stand by itself, without connection with the armature or with other fields. By touching one end of the test wire to the end of a field winding and the other to the field casting the integrity of the insulation can be proved. Of course, the field that is grounded will show a light. If there is doubt as to whether the winding of a field or any other circuit is intact, forming a continuous circuit, it can be tried out by touching one end of the lamp wire to each of the terminals of the doubtful circuit, being careful, of course, to try a circuit that should begin and end where the test wires are applied.

Tests for interruption of the armature circuit are equally simple. The commutator cars, with the armature coils, form a continuous circuit—a closed circuit—and every commutator bar is in electrical communication with every other car. Thus, if one end of the test wire is applied to a commutator bar and the other end carried around the whole commutator, touching every bar, the light should burn continuously, except, perhaps, where the current may be interrupted in passing from one bar to another. If there is a bar upon which the light does not burn, there is an interruption, and nine times out of ten it will be a break in the joint between the end of the armature coil an dthe end of the commutator bar, or in the short end of the wire from the coil to the bar.

In making such tests it must be remembered that the current—supposing the ordinary battery lighting current is used—is quite feeble, and will not pass unless the contact is fairly good. Therefore, the end that is applied to the cors, or to any part that is not clean and bright, should be well rubbed against the iron to make a good contact, or elce a little place scraped clean for the purpose. Also, a very slight or imperfect ground may not show up under such a test, the current not having sufficient strength to work through. In such a care the professional procedure is to use a testing magneto, which is simply a small, hand-cranked magneto with a bell which rings when the circuit is completed, just as the lamp lights in the rough tester referred to. Such a magneto produces a current of very high voltage, or pressure, and very low amperage, so that it has practically no heating power, and yet will force its way through even a small leak. It is not safe to use a heavy current for testing small machines, for the reason that a slight trouble may easily be aggravated by the fusing of the adjacent and almost touching metal surfaces.

Any machine that has a normally grounded circuit must, of course, he handled accordingly. But if the ground connection is interrupted so that there is no normal ground, the testing can be carried out.

Soda Solution as a Cleansing Agent.

Although gasolene long has been viewed by garage attendants as the cleansing fluid par excellence for "cutting" grease and oil, a solution of common washing soda in hot water will answer the purpose quite as well and is not nearly as expensive. One very good reason for using the washing soda solution is that it is less likely to leave small particles of ground-off metal on bearings, for instance.

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1,051,465. Cushion Tire. Dexter J. Thayer, Pittsburgh, Pa. Filed May 10, 1912. Serial No. 696,359. (Tire with air tube enclosed between metal walls, and thick tread.) 1 claim.

1,051,472. Antiskidding Grip Tread. Harry D. Weed, Syracuse, N. Y. Filed Feb. 24, 1908. Serial No. 417,441. (Tire tread of flat metal plates with separate hooks for attachment.) 5 claims.

1,051,475. Variable-Speed Transmission Mechanism. Dalton K. Wilson and Charles L. Tutt, Waterloo, Iowa. Filed July 24, 1911. Serial No. 640,178. (Chain-and-sprocket drive with individual clutches for sprockets.) 11 claims.

1,051,479. Automobile Number Display Device. Frederick W. Both, New York, N. Y. Filed Mar. 13, 1911. Serial No. 614,226. (License bracket attached to lamp.) 4 claims.

1,051,490. Tool for Repairing Pneumatic Tires, etc. Timothy C. Dobbins, Los Angeles, Cal. Filed Sept. 14, 1911. Serial No. 649,227. (Chain-and-lever tire removing tool.) 6 claims.

1,051,515. Speed-Changing Mechanism. Andrew L. Riker, Bridgeport, Conn., assignor to the Locomobile Company of America, New York, N. Y., a corporation of West Virginia. Filed Feb. 4, 1907. Serial No. 355,582. (Sliding gearset with tubular shaft carrying gears on the intermediate shaft.) 22 claims.

1,051,517. Vehicle Wheel. Leo L. Rogers, Boston, Mass., assignor to Standard Auto Spring Wheel Co., Phoenix, Ariz., a corporation of Arizona. Filed July 6, 1910. Serial No. 570,534. (Spring wheel with radial coil springs around hub.) 6 claims.

1,051,537. Internal-Combustion Engine. William Morten Appleton, Weston-super-Mare, England. Filed May 25, 1912. Serial No. 699,720. (Three-cylinder two-cycle motor with two-diameter pistons and cylinders.) 4 claims.

1,051,628. Spring Hub for Vehicle Wheels. John C. Pearson, Natchitoches, La. Filed Jan. 29, 1912. Serial No. 674,142. (Hub with spring connections for spokes.) 1 claim.

1,051,745. Spring Wheel. Ola C. Messick and Frank Jefferson, Seaford, Del. Filed April 25, 1912. Serial No. 693,269. (Wheel with springs between inner and outer rims.) 1 claim.

1,051,807. Starting Device for Internal-Combustion Engines. Frank E. Eckhart, Auburn, Ind. Filed June 15, 1910. Serial No. 566,949. (Spring-returned cable for rotating flywheel.) 6 claims.

1,051,837. Engine Gear. Charles E. Greenlief, Newton, Iowa, assignor to One Minute Mfg. Co., Newton, Iowa, a corporation of Iowa. Filed March 23, 1912. Serial No. 685,749. (Governing device acting to interrupt valve operation.) 5 claims.

1,051,858. Pneumatic Hub. Hubert B. Bigsby and William M. Lewis, New Hartford, Iowa. Filed April 18, 1912. Serial No. 691,554. (Pneumatic tube between inner and outer sections of wheel.) 1 claim.

1,051,866. Multiple-Cylinder Explosion-Motor. Louis Marie Gabriel Delaunay-Belleville, Paris, France, assignor to the Societe Anonyme des Automobiles Delaunay-Belleville, St.-Denis, France, a corporation of France. Filed March 9, 1909. Serial No. 482,268. (Multiple carburetter arrangement for motors with more than four cylinders.) 5 claims.

1,051,927. Vehicle Wheel. Thackston Thomas, Mutual, Okla. Filed April 8, 1911. Serial No. 619,668. (Wheel with portions of spokes formed of springs.) 2 claims.

1,051,939. Resilient Tire. Paul F. Wobst, Milwaukee, Wis. Filed Aug. 6, 1912. Serial No. 713,604. (Tire with internal springs.) 3 claims.

1,051,975. Tire-Fastener. Earl G. Watrous, Chicago, Ill. Filed Aug. 3, 1908. Serial No. 446,504. (L-head bolts acting against cam surfaces.) 2 claims.

1,051,976. Automobile Motor-Starter. Charles J. Widmer, Franklin, Pa. Filed Aug. 16, 1911. Serial No. 644,363. (Compressed air starter and clutch-operating mechanism interconnected.) 3 claims.

1,051,986. Internal-Combustion Engine. Aurin M. Chase, Syracuse, N. Y. Filed July 27, 1911. Serial No. 640,740. (Piston with upper part smaller than cylinder and fitted with rings.) 4 claims.

1,051,995. Automobile Axle. Gilbert S. Gundersen, Dayton, Ohio, assignor of one-half to George M. Smart, G. Russell Wells, Andrew E. Ausman, and Otto Kolb, Dayton, Ohio, and Frank A. Tranchant, Osborn, Ohio. Filed July 15, 1911. Serial No. 638,616. (Wheels on dead axle driven by gears from live shafts.) 1 claim.

1,052,005. Valve for Internal-Combustion Engines. Philip C. Kreitz, Cleveland, Ohio. Filed Feb. 2, 1911. Serial No. 606,084. (Valve with cast iron and steel compound head and steel stem.) 3 claims.

1,052,009. Cushioned Automobile Wheel. Walter F. Nelson, Exira, Iowa. Filed Feb. 24, 1911. Serial No. 611,264. (Wheel with spring tire.) 3 claims.

1,052,027. Spring Wheel. Davis C. Anderson, Laprairie, Minn. Filed June 3, 1912. Serial No. 701,348. (Spring wheel with rim revolving on rollers carried by springs.) 3 claims.

1,052,064. Vehicle Wheel. Emil F. Krell, Detroit, Mich. Filed May 1, 1911. Serial No. 624,333. (Wheel with springs between inner and outer rims.) 9 claims.

1,052,122. Spring Tire. William E. Baker, Scranton, Pa. Filed June 29, 1912. Serial No. 706,652. (Wheel with linked section rim backed by springs.) 1 claim.

1,052,129. Tire-Retainer. Franklyn M. Carhart, Sea Cliff, and Archibald Van de Water, Glen Cove, N. Y. Filed Sept. 23, 1911. Serial No. 650,978. (Solid tire with base dovetailed into retaining rings.) 3 claims.

1,052,155. Differential Mechanism. Milton C. Lenoir, Chicago, Ill., assignor, by mesne assignments, to Frank M. Lewis, Chicago, Ill. Filed March 11, 1912. Serial No. 683,043. (Friction roller differential.) 5 claims.

1,052,170. Spark Plug. Charles E. Peterson, Brooklyn, N. Y., assignor to Michigan Motor Specialties Co., Detroit, Mich., a corporation of Michigan. Filed Jan. 28, 1908. Serial No. 413,000. (Packing joint between shell and core of plug.) 7 claims.

1,052,224. Bumper-Bracket. Grant F. Discher, Milwaukee, Wis. Filed April 11, 1910. Serial No. 554,632. (Bracket and clamp for attachment to end of car frame.) 9 claims.

1,052,250. Vehicle Wheel. John S. Hines, Portland, Ind. Filed Jan. 24, 1912. Serial No. 673,268. (Wheel with concentric hub members separated by springs.) 1 claim.

1,052,290. Wheel. Brinay Smartt, Indianapolis, Ind. Filed April 20, 1912. Serial No. 692,147. (Wheel with pneumatic tires between inner and outer rims and an outer rim, and plunger rods between the tires.) 4 claims.

1,052,339. Valve for Internal-Combustion Engines. Lodewyk Jan Rutger Holst, Lansdowne, Pa., assignor of one-third to Henry S. Williams and one-third to Morris Earle, Philadelphia, Pa. Filed Feb. 13, 1912. Serial No. 677,382. (Motor with cylindrical valve with vertical reciprocating motion.) 5 claims.

1,052,340. Valve for Internal-Combustion Engines. Lodewyk Jan Rutger Holst, Lansdowne, Pa., assignor of one-third to Morris Earle and one-third to Henry S. Williams, Philadelphia, Pa. Filed March 6, 1912. Serial No. 681,929. (Valve system including auxiliary exhaust valve.) 1 claim.

1,052,358. Cushion-Spring Wheel. Henry James Marks, Toowoomba, Queensland, Australia. Filed July 30, 1912. Serial No. 712,291. (Wheel with spokes cushioned in cylinders projecting from hub.) 2 claims.

1,052,369. Speedometer. William O. Nelson, Baltimore, Md. Filed March 23, 1909. Serial No. 485,317. (Hydraulic speedometer drive.) 12 claims.

1,052,397. Carburetter for Petrol-Motors. Walter Wingfield, Ealing, England. Filed Dec. 16, 1911. Serial No. 666,201. (Spray-nozzle regulator.) 2 claims.

1,052,416. Diaphragm-Horn. Miller Reese Hutchison, Summit, N. J. Filed Oct. 26, 1909. Serial No. 524,761. (Electric motor horn.) 13 claims.

1,052,422. Inclosed Core for Tires. James M. Miller, Washington, D. C. Filed Feb. 29, 1912. Serial No. 680,725. (Cushion tire with cellular core.) 1 claim.

1,052,436. Valve for Internal-Combustion Engines. Lodewyk Jan Rutger Holst, Lansdowne, Pa., assignor of one-third to Henry S. Willims and one-third to Morris Earle, Philadelphia, Pa. Original appplicaion filed March 6, 1912, Serial No. 681,929. Divided and this application filed April 30, 1912, Serial No. 694,070. (Four-cycle motor with reciprocating piston valve.) 2 claims.

1,052,438. Cranking Device. Richard Dow Clemson, Middletown, N. Y. Filed May 22, 1912. Serial No. 698,905. (Spring starter and clutch mechanism.) 13 claims.

1,052,485. Motor Vehicle. Alfred H. Knight, Detroit, Mich., assignor to Packard Motor Car Co., Detroit, Mich., a corporation of Michigan. Filed July 22, 1910. Serial No. 573,343. (Detachable body construction.) 6 claims.

1,052,511. Mud-Guard for Automobiles. Oliver W. Patterson, Chicopee Falls, Mass. Filed Feb. 1, 1912. Serial No. 677,092. (Mud guard hinged to front end of running-board.) 4 claims.

1,052,552. Convertible Body for Automobiles. Albert A. Ackerman, South Bend, Ind., assignor of one-half to Harry A. Engman, South Bend, Ind. Filed April 15, 1912. Serial No. 690,880. (Detachable rear body section.) 8 claims.

1,052,559. Automobile Attachment. Milton L. Bernstein, New York, N. Y. Filed Aug. 10, 1911. Serial No. 643,416. (Starting crank and engaging means.) 2 claims.

1,052,560. Tread-Band for Tires of Motor Vehicles. John Carter Berry, Harrow, England. Filed Oct. 14, 1910. Serial No. 587,101. (Non-puncturable tread for pneumatic tires.) 2 claims.

1,052,565. Spring Wheel. Robert M. Burgess, Columbia, Mo. Filed Oct. 14, 1911. Serial No. 654,685. (Wheel with helical springs enclosing spokes.) 1 claim.

1,052,570. Spring Spoke. Warren H. Clark, Burlington, N. Y. Filed July 18, 1912. Serial No. 710,302. (Telescoping spokes with spring resistance.) 1 claims.

1,052,629. Liquid-Fuel Filter. Winfield A. Utzman, Toledo, Ohio. Filed July 22, 1912. Serial No. 710,902. (Gasolene filter with spherical body.) 6 claims.

1,052,648. Vehicle Suspension. William R. Blystone, Greensburg, Pa. Filed Sept. 30, 1912. Serial No. 723,172. (Spring suspension with sliding frames.) 3 claims.

1,052,681. Spring Wheel. Marius Mathiesen, San Antonio, Tex. Filed April 30, 1912. Serial No. 694,075. (Wheel with pivoted spring spokes.) 3 claims.

1,052,692. Friction Transmission Mechanism. Albert A. Reason, Pontiac, Mich., assignor of one-third to Floyd Reason, Detroit, Mich. Filed Dec. 11, 1911. Serial No. 664,934. (Friction drive with propeller shaft.) 12 claims.

1,052,743. Timer. Arthur R. Mosler, New York, N. Y., assignor to A. R. Mosler & Co., New York, N. Y., a corporation of New York. Filed Nov. 19, 1908. Serial No. 463,476. (Timer with laminated metal contacts.) 4 claims.

1,052,752. Clip for Steering Wheels of Automobiles. Frank Revett and William Simmers, New York, N. Y. Filed May 7, 1912. Serial No. 695,676. (Bracket attachment for steering wheel.) 7 claims.

1,052,757. Vehicle Wheel. John T. Shea, Glen Cove, N. Y. Filed April 22, 1908, Serial No. 428,683. Renewed June 6, 1912. Serial No. 702,111. (Tire made of disks set on edge.) 3 clams.

1,052,763. Motor. Hawley Stone, Rosebank, and George W. Scott, New York, N. Y. Filed May 24, 1912. Serial No. 699,428. (Motor with shaft in same axis as cylinder and cam drive.) 4 claims.

1,052,795. Shock-Absorber for Vehicles. Michael Mary Brophy, London, England. Filed Jan. 3, 1911. Serial No. 600,605. (Auxiliary spring shock absorber.) 4 claims.

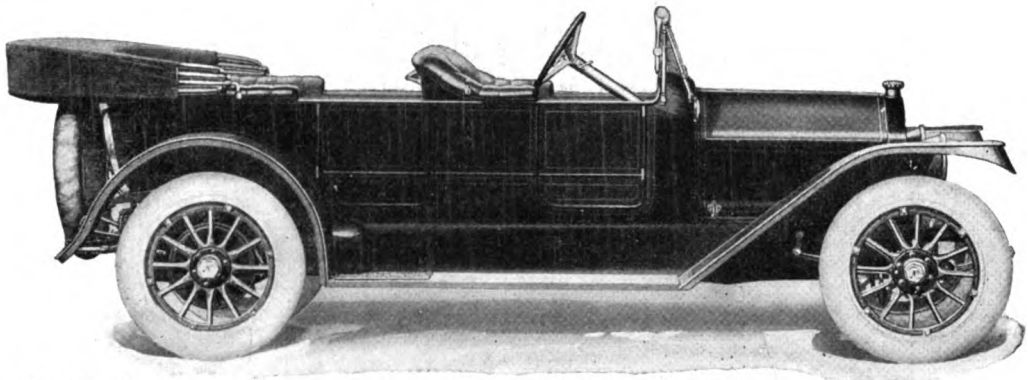
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Five Models, $2750 to $3400

Don't sign up to handle any car until you get our proposition

That's all we ask. Simply that you *investigate* the *National* before you put your name on the dotted line of any manufacturer's agreement.

If you happen to be one of the fortunate dealers who is making his business pay a nice annual profit, at least *investigate* the *National*, just to see if we have anything better to offer you.

Or, if you have not been getting the *net profit* you have a right to expect—by all means investigate the *National* before another day goes by.

Then decide for yourself

Here is what we claim—and it's up to you to make us prove it—the *National* is *your* logical "best seller." If we don't prove this to you conclusively—if we fail to convince you beyond the shadow of a reasonable doubt that when you sell the *National* your profits will not be eaten up in needless service and shop expenses—we won't expect you to join the great *National* Selling Organization.

All we ask is that you give us an opportunity to tell you exactly what we have to offer you and what we will do for you—then you are to decide for yourself.

You cannot afford to ignore this invitation

After thirteen years of experience in building and selling the *National*—with a thorough, intimate knowledge of every motor car on the market today—we claim that money cannot buy better materials than are used in the *National*: that the *National* has one of the most flexible, noiseless motors; the most efficient electric starting and lighting system; that it is second to none in power, dependability, ease of operation, convenience and comfort—and that *National* dealers are able to make a nice profit and *retain it*.

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If you happen to be located in open teritory, ***now*** is the time to become a part of the *National* Selling Organization. Ask our competitors about us and they will tell you we are favorably known for *square dealing*, *liberal policy*, and for the *advertising* and *sales* support we give our dealers. Let us send you complete specifications, detailed descriptions and our special terms to Dealers. In requesting this information you obligate yourself in no way. Arrange to visit our factory at Indianapolis, if you can do so conveniently—write or wire us at once—it will be worth your while.

National Motor Vehicle Co., Dept. 90, Indianapolis, Ind.

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To Dealers and Garage Men

This book is for you, particularly—full of practical suggestions on the proper methods of removing and replacing ball bearings, cleansing, lubricating, inclosure, maintainance, etc., etc., prepared by our engineers. It is a *real* manual and is worth real money to you. We will send it free if you address your request to

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A Continued Story
Chapter 4

No. 5
Is Interesting
Next Issue

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G'wan along and mind your business!

There's nothing the matter with me or this car either—I'm just trying the compression.

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A $25.00 Electric Warning Signal now

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This TUTO (two-tone) signal has two distinctly different warning notes. The ordinary signal for ordinary occasions, the abrupt, harsh, penetrating danger cry for emergency. The ordinary or first TUTO warning is adequate nine times in ten. The tone is secured by ordinary pressure on push button. The emergency warning or far away signal is secured by pushing button way down.

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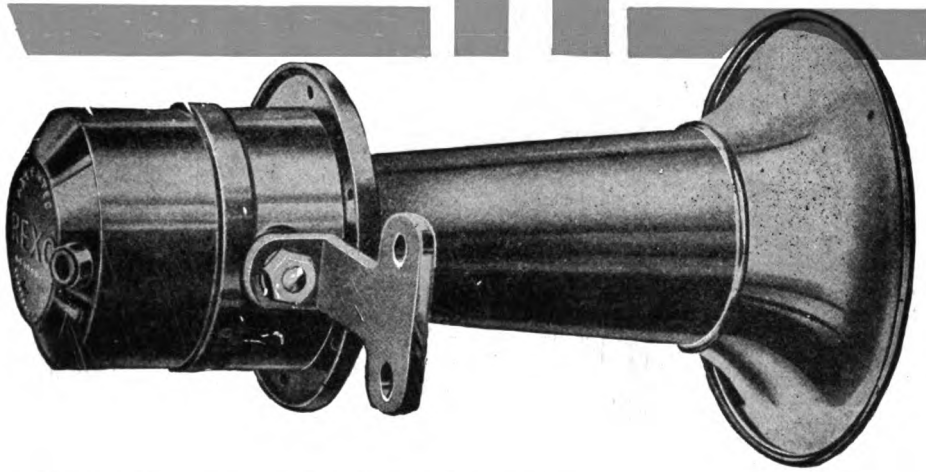
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Tens of thousands of REXO Signals are in use. Nearly a hundred thousand have been ordered for 1914 delivery. It is far and away the fastest selling accessory in all motordom and the REXO story appeals instantly to the average car owner.

In CAR-WISE logic a Good LITTLE signal will outsell a GOOD BIG SIGNAL in the same proportion that a good little car outsells a good big car. But the REXO is small in price only. The TONE is wonderfully forceful. It demands and secures the right of way in any traffic. It will sell instantly to four in every five owners of bulb-equipped cars. Behind this REXO Signal is the DEAN-ELYRIA reputation on all things electrical. May we send you our selling plan? It shows the way to leadership in the accessory field.

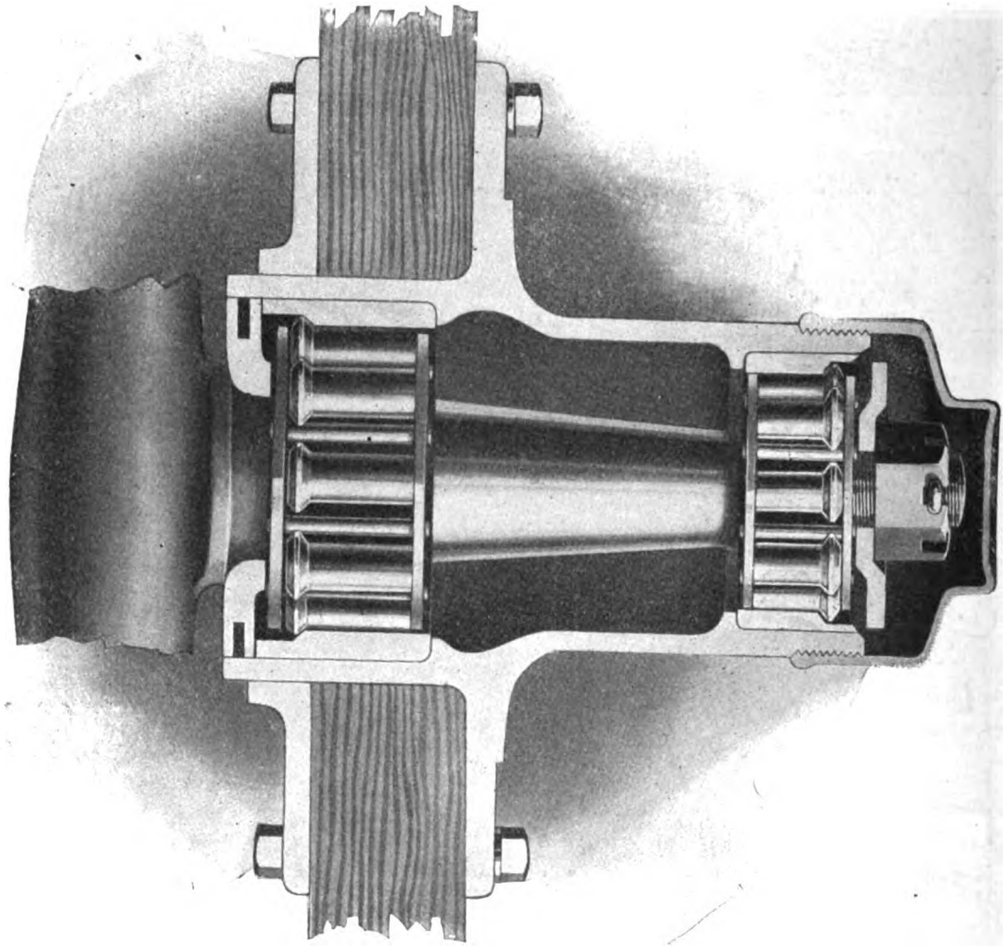
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"BOWER SAVES POWER"



The Two-fold Job of the Front Wheels

The front wheels of an automobile perform a double function; they bear part of the weight of the car; and they are the means by which it is steered. The front wheel bearings, accordingly, must sustain both the downward pressure from the load, and the side pressure that arises from turns and from the jolts and shocks of rough roads.

Bower Roller Bearings are scientifically designed to withstand both downward pressure, or "radial thrust," and side pressure, or "end thrust." Consisting of a cylindrical roller with a flanged head at one end, the Bower Bearing by its simple construction reduces friction to the minimum. For the constant and heavy radial thrust is carried by the whole length of the roller. The side thrust is carried by the flange; *the roller at no time is subject to this strain.* Hence the roller is self-aligning and always runs free. Because, moreover, Bower rollers and race-ways are at all times parallel, a maximum diameter of roller can be used, thus reducing wear. Finally, Bower Bearings are accurately adjusted before they leave the factory, and thereafter never need adjustment.

There are the reasons why "Bower Saves Power."

BOWER ROLLER BEARING CO., Detroit, Michigan

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ACCEPT NO SUBSTITUTE FOR PLATINUM POINTED

Mosler Spit Fire Plugs

Genuine Platinum Point Guaranteed Forever

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FOUR DIFFERENT TYPES

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DASH AND UNDER HOOD MODELS FOR ALL CARS

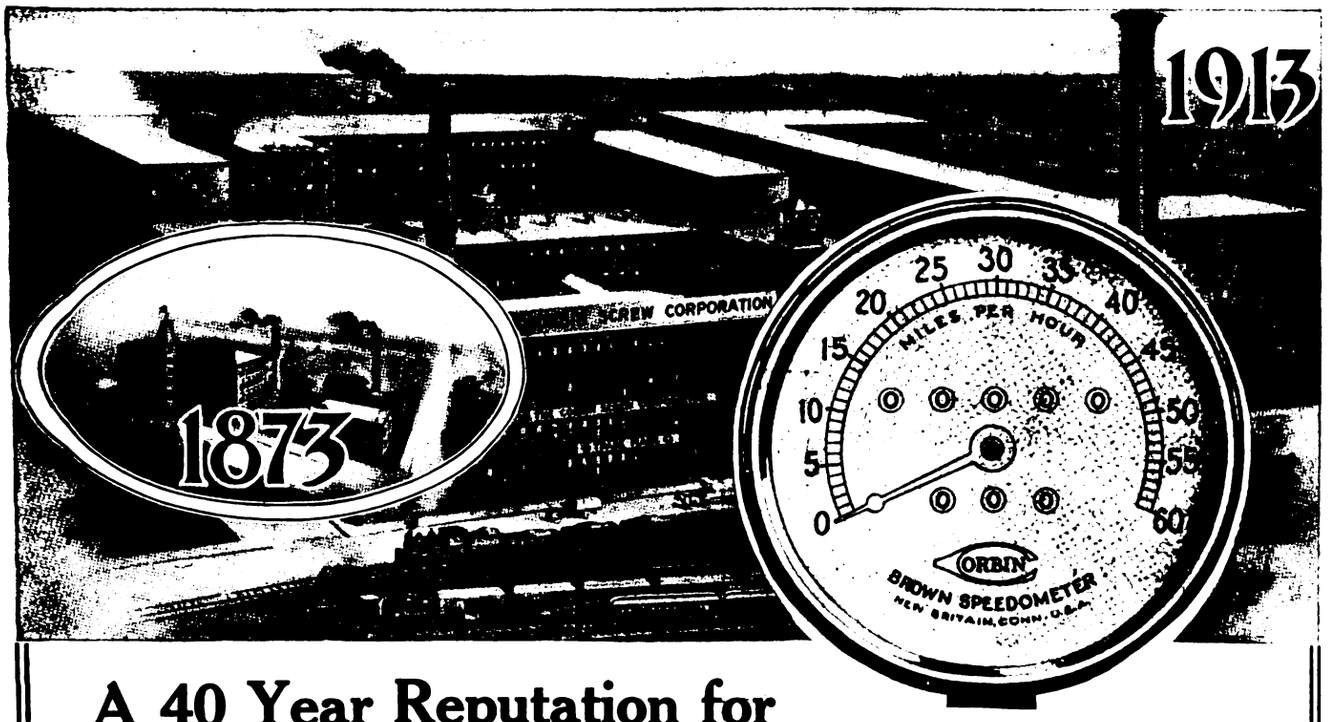


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"The Speedometer of Absolute Accuracy"

Forty thousand dealers testify to the quality of Corbin products.

The manufacturing policy that governs each is to so make it that it will be an advertisement for every other member of the famous line.

Ask any dealer what he thinks of Corbin products, and you will understand why the Corbin-Brown Speedometer has met with such instantaneous success.

The Corbin-Brown Speedometer was introduced because it filled a need—because it possessed none of the faults common to other speedometers in general.

The name, alone, is a guarantee that the Corbin-Brown Speedometer will give absolute satisfaction.

Sold by Leading Dealers Everywhere. Specify the Corbin-Brown

Write for Catalog

CORBIN SCREW CORPORATION

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Commercial Gasoline

More carburetor trouble is traceable directly to foreign substances in the fuel than to the inability of the carburetor to vaporize the gasoline properly.

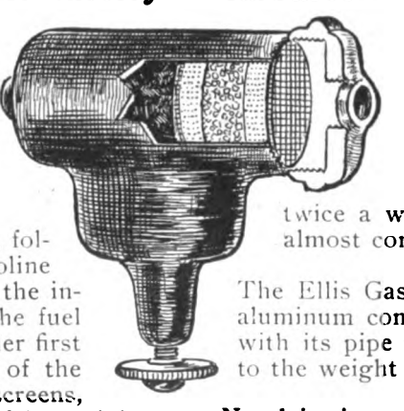


The remedy for carburetor trouble should be applied to the cause of the trouble. Remove the foreign substances from the fuel and carburetor troubles will cease.

Commercial gasoline, either high or low test, invariably contains more or less foreign matter, such as fine particles of dirt, parafine, sediment. Water collects and its presence is bound to cause trouble which ends in a "hang-up."

Probably no trouble is so dreaded by drivers as carburetor trouble. Carburetors come from the factory perfectly adjusted and even the most experienced driver hesitates to change the adjustment.

Their hesitation is natural and wise. The carburetor should do its work of vaporizing the fuel properly and when it balks, something is wrong. Invariably it is the fuel, not the carburetor which is at fault.



The Ellis Gasoline Purifier removes the cause of carburetor trouble and gives the carburetor a chance to do its work. It is more than a strainer; it filters and purifies gasoline without interfering with its free flow.

How best to understand the Ellis, follow in your mind the flow of gasoline from the tank through its pipe to the intake (left end in illustration). The fuel fills the lower portion of the Purifier first and as it rises into the cylinder of the purifier filters through a series of screens, first wire, then fine felt, quartz, felt, and last wire. Every particle of sediment, however fine, is removed, leaving nothing but pure gasoline to feed on to the carburetor.

We said that water caused a lot of carburetor trouble. This undesirable element is removed by gravity. It is caught in the lower chamber of the Purifier, and—owing to the greater specific gravity of water—the fuel rises over the water. Long before the precipitation chamber fills up with water and sediment it is drained off simply by loosening the thumb screw at the bottom of the Purifier. Once or twice a week is often enough, even with almost continual running.

The Ellis Gasoline Purifier is made either of aluminum composition or brass and complete with its pipe unions adds practically nothing to the weight of the machine.

No claim is made as to its saving in fuel costs for that is not its primary purpose.. While everybody knows that pure gasoline will develop more power than otherwise, *the great benefit of the Ellis Gasoline Purifier is found in its insurance against carburetor troubles and their recurrent expense.*

Write for booklet, information, prices and discounts to dealers.

THE NATIONAL SALES COMPANY, 45 Milk Street BOSTON, MASS.

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WARNER
QUALITY AUTO-METER

Finer Than the Finest Watch

THE expert watchmaker shown at the left, is adjusting the Warner hairspring—too fine to be seen in the picture—by which the speed indicating dial is returned to zero or neutral position when the car stops. This adjustment is so delicate that no machine ever devised can handle it. The workman must depend on the sensitiveness of his skilled fingers, highly developed in years of training, to tell when the tension or "pull" of the spring is absolutely correct.

We could use a larger, heavier spring, and eliminate this expensive operation. But the result would be a bulky, unwieldy part. It would lose that extremely sensitive accuracy which is an exclusive Warner feature.

THE man at the right was formerly factory superintendent and chief research engineer for one of the greatest watch manufacturers in the East. He is shown at work on one of the many experiments we are constantly engaged in for improving the Warner, in one corner of our experimental room.

The machine is a watchmaker's lathe, the most delicate of its kind ever devised. It was not delicate enough for Warner construction, however. Various refinements designed and applied to the instrument give it such an extreme nicety of operation that the parts it turns out are far more accurately formed and fitted than many of those in the most costly watches.

No other speedometer maker uses these expensive methods of manufacture. The Warner Auto-Meter is the highest quality speed and mileage recording instrument, in design, material and workmanship, in the world.

The Warner Auto-Meter Factory, Beloit, Wisconsin

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5-X-Test Tubes

The Dealer's Best Advertisement

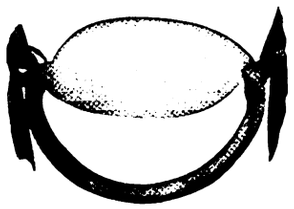
JUST ponder for one minute, Mr. Dealer, what business building power you have in a tube like 5-X-Test.

You can sell this Tube and **know** that it will give your customer 100% service. We build that service into it. We use very fine rubber. And each tube is made very carefully by experts.

Every 5-X-Test Tube you sell is a business building advertisement for your store. That tube will not only sell scores of others among user's friends, but it will bring you business in other lines.

Every live, conscientious dealer wants to give the best tube possible for the money. We want you to test this tube. The quality will convince you—our special exclusive proposition will interest you.

Read how we build the Mansfield quality into it and then write us for a sample section.



Made of Fine Pure Rubber

Fine pure gum — unadulterated—is used in building 5-X-Test Tubes. We prepare the rubber by a special formula to increase the life and toughness to the maximum. Therein lies the secret of 5-X-Test superiority.

Careful Building

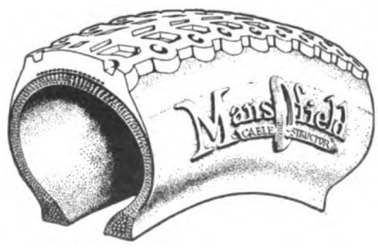
We build each 5-X-Test Tube very carefully—and very slowly. The work is done under the supervision of the most exacting inspectors. Through this very careful building we secure absolute tube-perfection.

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Control the Sale of Cable-Structur

Our sales policy confines the sale of Cable-Structur Tires to **one man in a town.** You will quickly appreciate what that means to you.

We still have some territory open. Write us today and control the sale of this great tire in your city. Just say "give us your exclusive dealers proposition as outlined in Motor World, and send your catalog."



The Test of Strength

The great strength of this tube is proved by the picture. It's from a stock tube inflated to more than 5 times normal size.

Prove Our Claims

Fill in the coupon right now and let us prove our claims for 5-X-Test Tubes. We want you to compare 5-X-Test with the tube you now sell. **Our exclusive dealers proposition is very liberal** and will interest you. Write us now.

The Mansfield Tire & Rubber Co.
MANSFIELD, OHIO

The Mansfield Tire & Rubber Co.,
Mansfield, Ohio.

We have read your Dealers' announcement in Motor World, and you may send us a sample section of your 5-X-Test Tube.
Also send us your special proposition on one-third gross assorted sizes, half grey and half red.

.....

.....

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Start with the Right Starter!

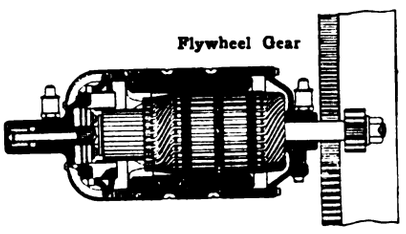
The only starter really worth while is the one which just goes about its business and is never heard of afterward by the car maker or dealer. Selling a starter like that means a profit for you and satisfaction for everyone concerned.

Just Press the Button

Does that describe the starters on your cars? If it doesn't, how much is it going to cost you to keep your customers satisfied? It is better to start right with a starter that asks no apologies.

The RUSHMORE STARTER

is that kind. Pressing a foot button causes it to take hold of the engine, spin it, and let go at precisely the right instant. There are no gears to shift, no ratchet drives to wear out or stick, no friction clutch to slip, no mechanism of any sort beyond a simple electric motor, whose armature shaft carries the driving pinion and has an end-play that brings the pinion into mesh with the fly-wheel gear when the button is pressed. Disengagement is automatic, positive and noiseless.



Write for literature about the Rushmore Starting and Lighting System. It is the biggest thing of the day in the automobile world.

Rushmore Dynamo Works, Plainfield, N. J.

LONDON PARIS BERLIN

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70 to 140 Miles Every Day

That's the steady record of the one-ton Kelly Trucks running on the Malvern Hill-Richmond Bus Line.

Each truck makes at least four trips a day between the Virginia capital and historic Malvern Hill. The distance is 18 miles and the average is 1 hour and 30 minutes.

Hundreds of Kelly Trucks are equaling or bettering this performance every day under all sorts of conditions.

Would it help your business if your wagons were able to average more than 70 miles a day? A kelly can do it.

DEALERS!

There is still some desirable Kelly territory open. Write for our agency proposition.

THE KELLY-SPRINGFIELD MOTOR TRUCK COMPANY

807 Burt Street, Springfield, Ohio

(62)

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Progress

NEW YORK



1909 – 1910

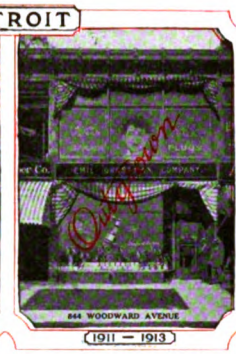


1910 – 1913

DETROIT



1909 – 1911



1911 – 1913





1913 BUSH TERMINAL MODEL FACTORY BLDG Nº 20



PART OF BROOKLYN FACTORY BEFORE MACHINERY WAS INSTALLED



PORCELAIN FACTORY, TRENTON, N.J. IN COURSE OF CONSTRUCTION

On September 15, 1913, we will consolidate our Detroit and New York factories at the

Bush Terminal, Model Factory No. 20
41st Street and 2d Avenue
Brooklyn (New York City)

Our new quarters embrace an area of 31,000 square feet—***on one floor***—two and one-half times the manufacturing and office room we now occupy.

Increased floor space permits of the installation of additional specially designed machinery, nickel and brass plating and enameling equipment.

The Bush Model Factories, constituting a freight terminal for 11 railroads, 13 coast-wise and river steamship lines and 17 trans-Atlantic and trans-Pacific steamship lines, we will have facilities for loading freight from our shipping department direct into the freight cars and holds of vessels for all parts of this country and abroad.

To better describe the extent of our enlarged operations, our corporate title will be changed from Emil Grossman Company to

Emil Grossman M'f'g Company, Inc.

Our Building at 844 Woodward Avenue, Detroit, Mich., will be continued as our Western Branch.

Our Porcelain Factory at Trenton, N. J., is being enlarged. Three new buildings and two kilns are completed.

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The two Imperators

Both made in Germany

F & S

PATENT

KNOWN BY THREE FAMOUS EAGLES THE WORLD AROUND

EAGLE EMBLEM OF THE IMPERATOR OF ALL MOTION BY EARTH, SEA or SKY

BRETZ COMPANY

Sole Importers

250 West Fifty-fourth, New York.

EAGLE ON BOW OF THE S.S. "IMPERATOR", OF OCEAN TRAVEL

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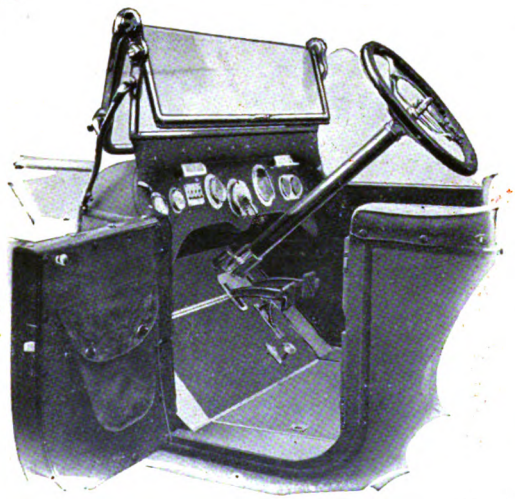
HAVERS SIX

1914 announcement of the pioneer builder of the moderate-priced "Six"

In making this first announcement of the 1914 Havers 6-60 we wish to address ourselves particularly to dealers well established in their territories and their communities, and who have the ability and the facilities to sell a "six" of the high type represented in the Havers.

For such dealers we believe the Havers to be an especially interesting car, because of its high quality, its great power, the worth and reputation of its component parts, its equipment, and the reasonable price at which such a car can be sold with fair profit to dealer and maker.

We further believe that the dealer who is a good business man, and who is looking to the future of his investment, will agree with us when he knows the Havers car.



Note the wealth of instrument board equipment and the two hooded electric lights

Now in its fourth year, the Havers has made substantial progress and substantial success in the past.

We were the first builders in America to produce a six-cylinder car under $3000.

We paved the way for other sixes, by showing that a moderate-priced six can be made a success.

The Havers has always welcomed comparison in every detail with cars of its class; and if we could make the statement stronger with reference to the 1914 product, we should do so.

Mechanically there is no change in the 1914 cars over those of the past season, simply because we could find no place where change meant improvement or greater efficiency.

In the matter of accessories and equipment, we believe no car—at any price—has ever been so completely fitted as the Havers 6-60.

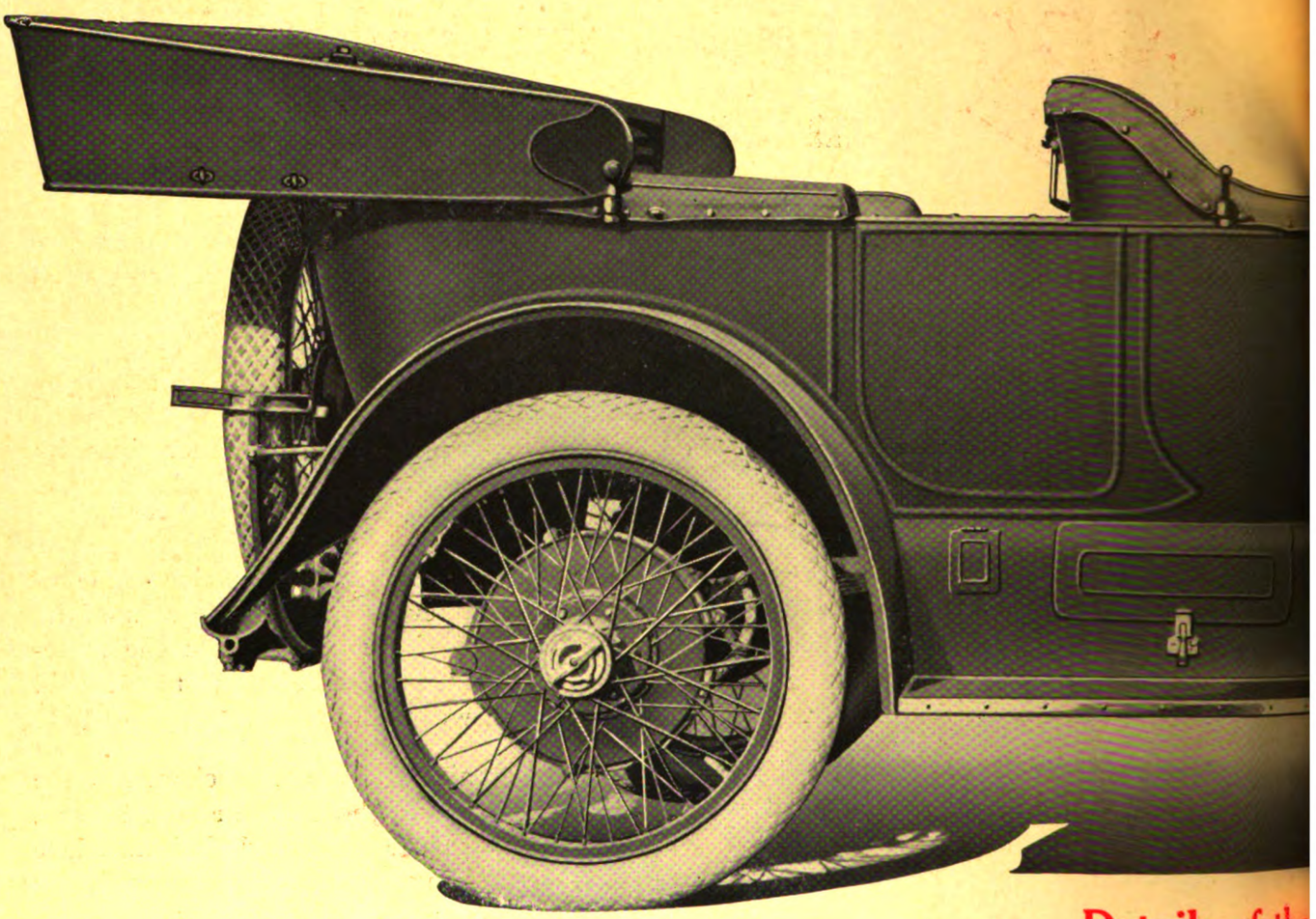
Havers dealers had no trouble disposing of all the 1913 product we could supply; and the 1914 car has been made even more salable to that class of buyers who demand a complete car of the highest grade.

We shall be glad to correspond with dealers to whom such a car presents an opportunity.

Havers Motor Car Co.
Port Huron,
Michigan

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A car that will sell to men who formerly



Details of the

MOTOR—Bore and stroke, 4⅛ x 5¼ inches, 60 H. P.
FRAME—Double drop pressed steel, heavy channel section, width 30 in. in front, 31½ in. in rear. Metal 7/32 in. thick.
WHEEL BASE—128 inches.
DRIVE—Propellor shaft carried in torsion tube with full universal and slip joint on transmission shaft. Driving strain on rear axle carried through radius rods. Torsional strains carried through frame by a large yoke on third member.
AXLES—Front axle drop forged "I" beam section with drop forged yokes, spindle 1⅝ in. in diameter. Rear axle full floating. Drive shaft 1½ in. nickel steel.
BRAKES—Service brake, external contracting. Emergency brake, internal expanding. Both lined with Raybestos and equipped with equalizers. Drum 16 in. diameter, 2½ in. wide.
STEERING GEAR—Worm and full wheel type, irreversible and adjustable for wear. Heavy nickel 2 in. diameter steering column, 18 in. steering wheel.
WHEELS—Wood, artillery type. Spokes of best second growth hickory. Firestone quick-detachable, demountable rims. McCue wire wheels optional, $50.
TIRES—36 x 4½ in., front and rear.
TREAD—56 inches.
SPRINGS—Front, semi-elliptic, 40 in. long by 2 in.

There is a class of men who demand the highest quality in their cars, but are perfectly willing to take a saving in the purchase price.

To such men the Havers 6-60 makes its strongest appeal.

It offers the quality, the stability and the engineering skill embodied in the costliest cars.

It offers the same high power, the same efficiency in road work.

It offers the same silence of operation; the same convenience; the same comfort.

And in equipment—the big things and the little things that every man likes to have on his car—it goes far ahead of any and all of its contemporaries.

And there is another class to which the Havers makes an appeal almost equally strong.

This class is made up of the men who have tried the cheap six.

The men who have found their cars under-power for their weight; "up against it" on the hills; hard-riding and generally unsatisfactory; yet who appreciate and want the advantages of good six-cylinder construction.

In both of these classes are the men who will be buyers of the Havers 6-60 in 1914.

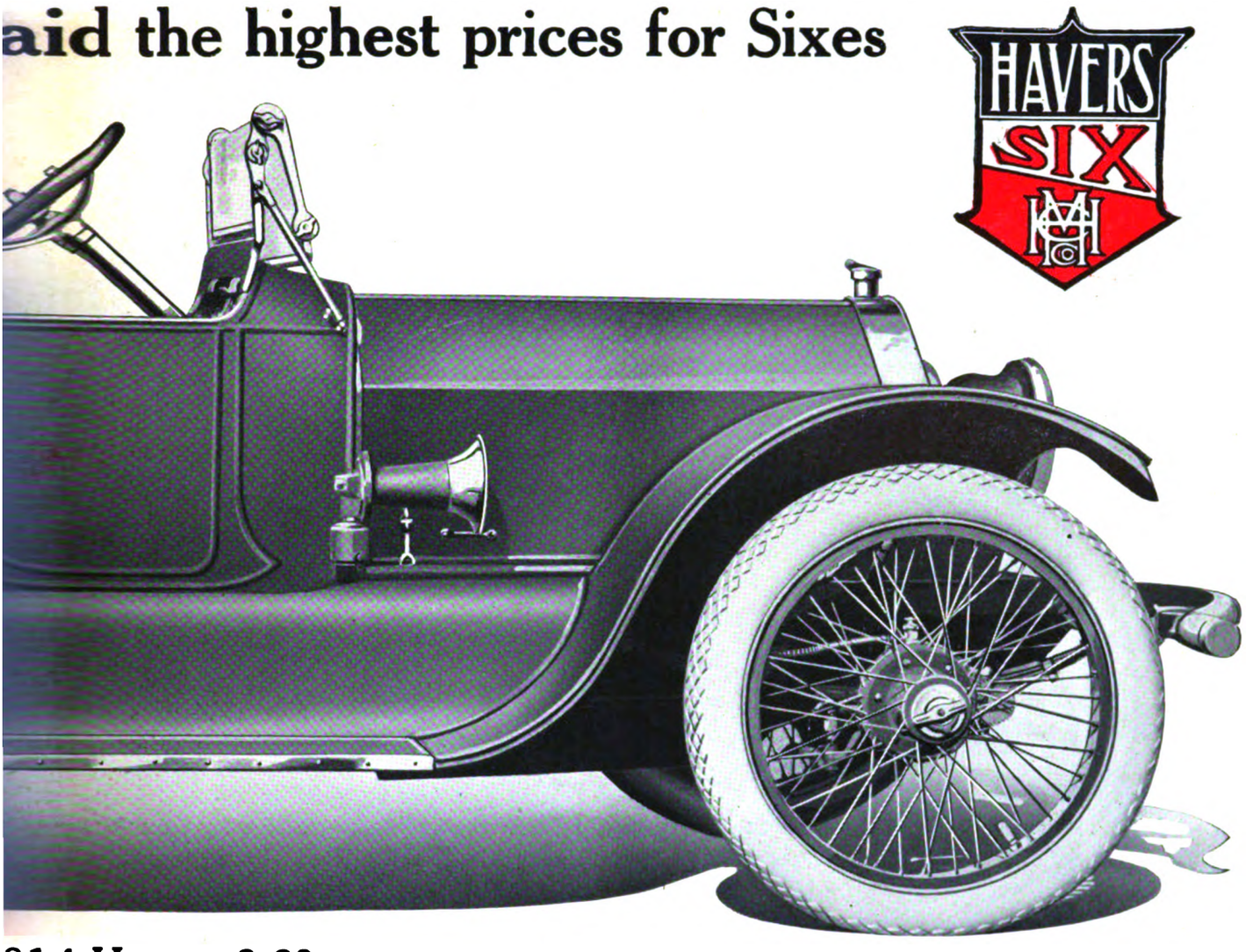
We speak of the Havers as a car of the highest quality because of the reputation and standing of the manufacturers who supply its various units.

The motor is the Continental—the finest product

Havers Motor Car Co.,

Digitized by Google

aid the highest prices for Sixes



914 Havers 6-60

wide. Rear, platform. Sides, 46 in. long by 2 in. wide. Cross, 36 in. long by 2 in. wide.

CONTROL—Hand gear change lever and emergency brake lever at driver's right, inside body; service brake, right foot pedal; clutch, left foot pedal; foot accelerator.

OIL CAPACITY—8 quarts.

GASOLINE CAPACITY—20 gallons, with 10-gallon storage tank at rear. Force feed, air pressure maintained by pump driven by motor.

STANDARD COLORS—Regal blue or Brewster green.

STANDARD EQUIPMENT—Cowl board on which will be assembled, flush with same; Warner speedometer, eight-day clock, gasoline gauge, air gauge, ammeter, volt-meter, 4-gang double button lighting switches, two dash lights, new design full nickel wind shield of the highest quality, Tonneau light, trouble light with cord, rode rail bag with four compartments, toilet articles in one. High grade top, complete set of slip covers, including top dust boot of the same material, license brackets—front and rear, foot scrapers for running board, new type double rear tire irons, power-driven tire pump, Klaxet electric horn, heavy steel truss rubber cushion front bumper, oil can holders, North-East system for electric starting and lighting.

PRICE—Fully equipped f. o. b. Port Huron, Mich., $2485. Two folding tonneau seats, $50. Wire wheels, $50.

from the oldest plant in America making high-grade motors.

Its horsepower is 60—one to each 60 pounds of car weight—which we believe to be a higher power and weight proportion than found in any other six.

Weston-Mott axles front and rear, are the guarantee of axle soundness.

Transmissions are from the Warner Manufacturing Company; universal joints are Spicer; bearings Hess-Bright and Hyatt; Warner steering gears.

This roll of honor is a big selling point; for, as you know, these parts are the best that money can buy.

Port Huron, Michigan

In the Havers they are combined harmoniously by the highest engineering skill we can command.

So here, in the vitals of the car, you have every element that makes for quality in the finished product.

Moreover, when you have sold a Havers car, you have sold the most completely equipped car on the market.

Your buyer is required to add nothing; you are required to add no equipment item at your own expense.

Seat covers, front bumper, electric horn, power-driven tire pump, oil can holders, tire irons—everything is on the Havers 6-60.

Let us hear from you at once if you believe you can sell the Havers 6-60.

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HAVERS SIX

The 6-44—a splendid running mate for the larger Havers

Our enthusiasm for the Havers 6-60 is shared by this car's splendid running mate, the 6-44, at $1985.

This is a car that has made an unassailable place for itself by its steady and consistent performance.

It is the direct lineal descendant of the first Havers; and has never failed to uphold the good name of the line.

Its motor is rated at 44 horsepower, which, in proportion to the weight of the car, is more than ample.

So, here, in a six, is a car priced no higher than a high-grade four, and which carries out to the perfection of present development the advantages of six cylinders over four cylinders.

As we have already said, the Havers Motor Car Company has had three substantially successful years.

We feel that our success has been due to three elements—the car we build, the organization we have perfected, and our policy of conservatism and service to owners.

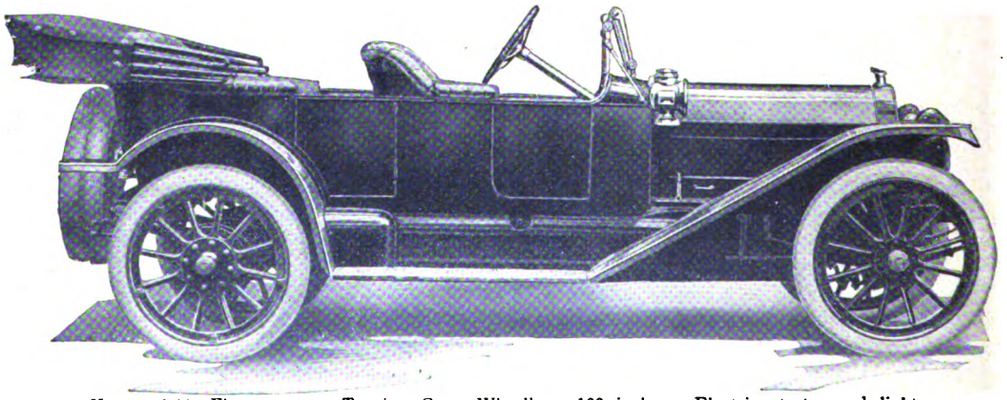
We feel that the good dealer appreciates methods of the sort we pursue.

And that we are correct in this is evidenced by the inquiries about 1914 cars that have reached us prior to any public announcement.

We have room for more dealers; our output is to be increased for 1914.

We would like to hear from you without delay if the Havers line presents itself to you as an opportunity for 1914 and following years.

Havers Motor Car Co., Port Huron, Mich.



Havers 6-44—Five-passenger Touring Car. Wheelbase 122 inches. Electric starter and lights Top, windshield and speedometer.....Price $1,985

Name.....

Address.....

Send me details of 1914 dealers' proposition at once.

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Elgin National Race

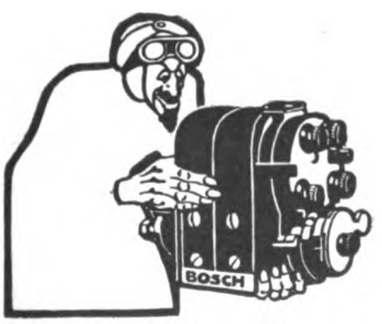
Another Bosch Victory

—Of Course—

A rigorous test again is given Bosch Magnetos and Plugs and again they prove their superiority over all. ∴ ∴ ∴

1st Stutz —Bosch Magneto and Plugs
2nd Mason—Bosch Magneto and Plugs
3rd Mercer—Bosch Magneto and Plugs

Not only did Bosch make its usual clean sweep but the Stutz broke the record for the course and the Mercer for the lap.



There is more vim, vigor and snap in Bosch Ignition than possibly can be obtained otherwise.

Be Quite Positive YOUR Engine Is Bosch-Equipped

Bosch Magneto Company
224 West 46th Street New York

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The car automobile buyers are wild to see

The old-reliable Haynes with its year-in-advance features, creates an opportunity for Haynes Dealers never before equaled in the annals of the American automobile

For twenty years the Haynes car has been piling up prestige. The first in the field and with years the start of other cars, it has constantly led in all that makes a motor car dependable and roadworthy.

HAYNES

America's First Car

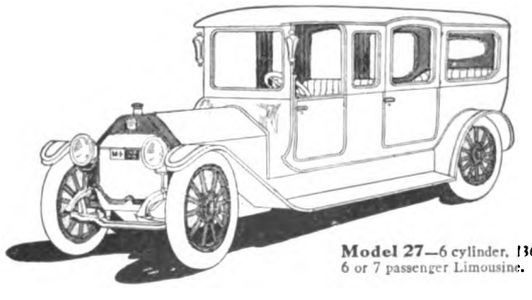
Here are a few instances of Haynes pioneering: first two-cylinder opposed car, first user of aluminum in crank shaft, first user of nickel steel in axles, first to make side door car, first to use throttling carburetor, make and break spark, jump spark, electric ignition, magneto and double independent system of ignition, through two sets of spark plugs.

And now, the Haynes again leads the field in the adoption of the most wonderful improvement of motoring history—the Vulcan Electric Gear Shift.

Far greater than the electric starter is the Vulcan Electric Gear Shift, standard equipment with the Haynes

The electric starter was a great invention—but it is used only when the car is to be set in motion. The device that shifts the gears automatically—the Vulcan Electric Gear Shift—comes into use *constantly*—every time a change of speed is to be made.

If the electric starter is great, we must call the electric gear shift much greater. If the self-starter was of sufficient interest to draw crowds to the salesrooms of the cars which were first to make use of it, picture the greater throngs that are hastening to see the Haynes with the Electric Gear Shift.



Model 27—6 cylinder, 136-in. wheelbase, 6 or 7 passenger Limousine. Price, $3850

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Specifications of the New Haynes

Motor—Bore 4 1-4 in., 5 1-2 in. L-head Haynes. Cylinders cast in pairs. Model 26, A. L. A. M., 43.38 H. P., Dynamometer 65 H. P. Model 27, A. L. A. M., 43.35 H. P., Dynamometer 65 H. P. Model 28, A. L. A. M., 29.9 H. P., Dynamometer 48 H. P.

Weight—Model 26, 3800 lbs. Model 27, 4000 lbs. Model 28, 3400 lbs.

Cooling—Centrifugal pump and pressed steel fan.

Wheel Base—Model 26, 130. Model 27, 136. Model 28, 118.

Ignition—American Simms magneto.

Carburetor—Stromberg.

Lubrication—Splash and gravity feed.

Control—Left hand. **Vulcan Electric Gear Shift.**

Transmission—Selective type, three speeds forward, one reverse.

Steering Column—Worm and worm gear type.

Clutch—Haynes contracting steel band.

Rear Axle—Full floating Timken on Models 26 and 27; McCue, Model 28, Gourney bearings.

Front Axle—I-beam. O. H. steel heat treated.

Wheels—Artillery type. Funk demountable rims.

Tires—Models 26 and 27, 36 x 4 1-2. Model 28, 34 x 4.

Springs—Front semi-elliptic 39 1-8 x 2, rear 48 x 2.

Brakes—15 1-4 external and 15 internal, Models 26 and 27. 12 and 16 internal on Model 28.

Finish—Indiana dark blue body. Pacific tourgray, optional.

Gasoline Feed—Pressure. Automatic feed.

Upholstery—Buffed leather, deep cushions.

Starting and Lighting—Leece-Neville electrical system.

Cowl-Board Equipment—Electric lights, sight oil feed, automatic cut-out for generator, dash light, auxiliary air pressure pump, air gauge and speedometer. Models 26 and 27 have rim wind clock.

Other Standard Equipment—Top, top cover of silk mohair, mechanical tire pump, rain vision ventilating wind shield, Vulcan electric gear shift, two large electric headlights, electric side lights, electric tail light, full dash equipment, electric starter, generator, 12 volt, 80 ampere hour storage battery, horn, coat and foot rails, tire irons, full tool equipment, one extra demountable rim and Collins curtains. Models 26 and 27 have shock absorbers.

Hand lever shift optional, all models, at $200 reduction.

Two of the new Haynes Models and a glimpse at what they offer

The mere outline of the specifications of the new Haynes models is interesting and convincing—it reveals the most noteworthy line of features ever offered in any automobile at any price.

Yet these specifications, convincing as they are, can't make you realize what a good proposition the Haynes really offers—you must see the new models themselves to appreciate the long, sweeping lines, the beautiful bodies, the completeness, and the comfort of these latest Haynes cars.

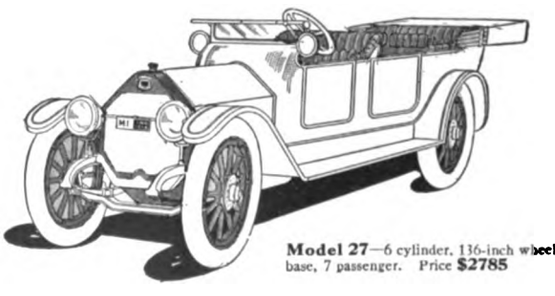
Of their reliability nothing need be said. You well know the Haynes reputation in that respect.

The Vulcan Electric Gear Shift, the greatest feature in automobile history to bring the prospects in—the Haynes, America's First Car, a grand car in every respect to clinch sales. You can't beat this combination

Write Quick for Particulars and Find Out if Your Territory Is Still Open

The Haynes Automobile Company

1 Main Street, Kokomo, Indiana



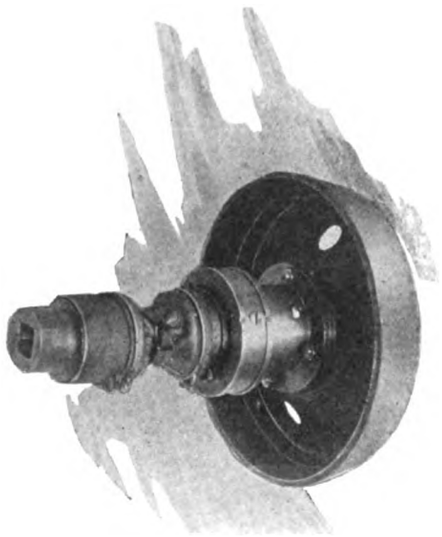
Model 27—6 cylinder, 136-inch wheelbase, 7 passenger. Price **$2785**

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Hartford Cone Clutches

THE limits of half-thousandth and quarter-thousandth of an inch to which certain parts of Hartford Cone Clutches must come are very close. It is one thing to set certain limits and another thing to live up to them. If such limits are worth while setting, it is equally important that they be adhered to.

These limits are insured. The most careful machinist and the most careful inspector may make a mistake while using a micrometer. One turn too many will make all the difference in the world, so to avoid any chance of error, we employ "go and not go" gauges. These gauges cannot make a mistake. The part being tested either goes or does not go.



Standard Hartford Cone Clutch Unit Complete With Universals. This is the Type Clutch We Have Specialized in for Years.

Each part is tested and inspected after each operation. It is work, inspection, work, inspection—with clock-like regularity. Our own interests are served just as well as the manufacturer's interests and the trouble we go to in making the repeated inspections serves to keep the parts which go to make up the complete clutch assembly accurate and to insure their passing the "final" inspection and test. By detecting every slight variation from the perfect and correcting it as it develops, it is scarcely ever necessary to discard the complete assembly as faulty when it gets to "final" inspection.

Another, and probably the greatest benefit resulting from the rigid tests in force at the Hartford plant, the reason why such scrupulous care is well worth while, is found in the fact that it insures against a defective clutch ever reaching a customer, with its consequent return to us, and the moral effect of such a contingency.

The quality and efficiency of Hartford Cone Clutches is well worth the investigation of every car or truck manufacturer in the country.

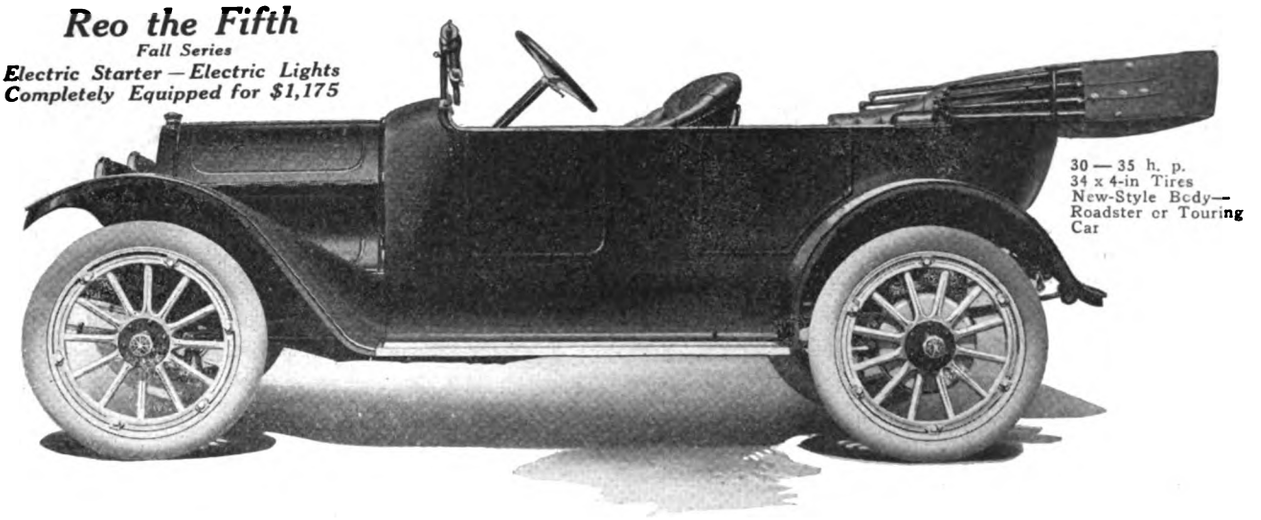
Hartford Auto Parts Company
HARTFORD, CONN.

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Reo the Fifth

Fall Series

Electric Starter — Electric Lights
Completely Equipped for $1,175



30 — 35 h. p.
34 x 4-in Tires
New-Style Body—
Roadster or Touring Car

Now $220 Less

Last season's model of Reo the Fifth, with electric starter and complete equipment, sold at $1,395. And the year was our record year, exceeding our previous year by 25 per cent.

Now we have added many improvements. And, without sacrificing one feature, without skimping one part, we are quoting the car at $1,175 complete.

This is how we have done it:

The best electric starters cost much less this year. Our chassis is standardized. Our capacity is largely increased.

All the special machinery, jigs and tools for this chassis have been charged against previous output. These items from now on are wiped out from our cost.

So we offer you now the best car that R. E. Olds ever built. We offer the handsomest car that ever went from this factory. And we offer a price $220 less than a car of this class ever sold for.

This is the greatest innovation which has ever been offered in the history of the Reo concern.

Reo the Fifth with Many Improvements

The New Things

Now comes this car with a new-style body—a low, rakish, low-hung body. A wider body. A cowl-front body with a gondola back—the very latest mode.

The instrument board, with all instruments set flush, is brought within reach of the operator.

The windshield is ventilating, clear vision and rain vision. The searchlights have dimming attachment. The upholstering is deep and soft.

There's a new-style tire carrier on the back, which also holds the tail light and the number tag in a manner which complies with all laws.

We add an electric horn.

The transmission has been changed in ways which accomplish utter silence.

Electric Starter Electric Lights

Now Reo the Fifth comes completely equipped with all that modern cars require. No extras are needed.

Electric self-starter — electric lights.

Speedometer — windshield — electric horn.

Mohair top, curtains and envelope.

Extra demountable rim.

Tools, robe rail, etc.

Our Exclusive One-Rod Control

This car alone has our center rod control. A rod which connects directly with the gears. No outside levers, no connecting links.

The gear shifting is done by moving this rod only three inches in each of four directions. And the rod isn't in the way.

No side levers, no brake levers. Both brakes are operated by foot pedals. The driver's entrance from either side is clear. These appealing features are found in no other car.

Every Feature Retained

We still retain every costly feature which made this car distinctive. It is still the best car R. E. Olds can build, after 26 years' experience.

The steel is twice analyzed, so the strength is made certain. Each vital part, at much added cost, is given 50 per cent overcapacity.

The gears are tested for 75,000 pounds per tooth — the springs for 100,000 vibrations.

The car is over-tired. We use 15 roller bearings and 190 drop forgings. The carburetor is doubly-heated.

All the extremes, all the costly precautions which made this car famous are here. All the tests and inspections—all the margins of safety—all the utter exactness. This car is built for low cost of upkeep, and to run year after year as well as it runs when new.

Now with all these unique features, with all these improvements, we quote you a saving of $220. That's the result of three years' concentration on a single model. Such a car at such a price would be otherwise impossible.

Look where you will, you will not at this price—nor anywhere near it—find a car you would think of preferring.

We have dealers in a thousand towns. Go see this new model and ask when you can get one. Also write for our catalog with full specifications, details and comparisons.

R. M. Owen & Co. General Sales Agents for Reo Motor Car Co., Lansing, Mich.

Canadian Price, $1,575. Factory, St. Catharines, Ont.

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A broken spring does not necessarily prevent a re-sale to the customer whose car suffered, but FAILURE OF THE SPRING STEEL THAT FORMS YOUR NUT LOCKS results in a general looseness that positively militates against the re-sale of a car of the same make to that customer.

You test your car springs to determine the size, the grade of steel and the heat treatment, and these are also the fundamentals of nut lock washer officiency.

Why not test your nut locks as you do your springs?

Or do you prefer to ovontually incroaso your cost $2 or $3 por car?

THE NATIONAL LOCK WASHER COMPANY

CHICAGO, ILL.——————NEWARK, N. J.

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48 "Six" KISSELKAR 48 "Six"

A Spontaneous Success

THE warm reception of the new **KisselKar 48-"Six,"** and the popularity it has attained in only a few weeks, prove beyond doubt that the public is quick and keen in the recognition of automobile values.

Wherever this car has been shown it has created genuine enthusiasm. Its low hung chassis, clean, artistic lines and general refinement of design create an instantly favorable impression, which is decisively confirmed by a study of the specifications and practical test of its riding qualities.

The **KisselKar 48-"Six"** is more than "eye-deep." While it is good to look upon—every inch an aristocrat from radiator to tail-light—the real measure of its merit lies in the things that have to do with **service** and **comfort.** In these vital factors the **KisselKar 48-"Six"** challenges comparison with any car regardless of price.

There is no more efficient power plant under the hood of any automobile. The Kissel engine is famous for its power, responsiveness and silent, smooth running qualities. It is easily accessible, as transmission and clutch are combined in a single unit.

Exceptionally liberal wheelbase, big door openings, springs and shock absorbers, roomy tonneau, deep upholstered seats and de luxe equipment, including Golde patent "one man" top, Warner speedometer and Klaxon horn, afford all the comfort and convenience provided by cars costing hundreds of dollars more than the **KisselKar 48-"Six."**

The more you draw comparisons, the more you will be impressed that the new **KisselKar 48-"Six"** is a car of rare distinction and unmatched value.

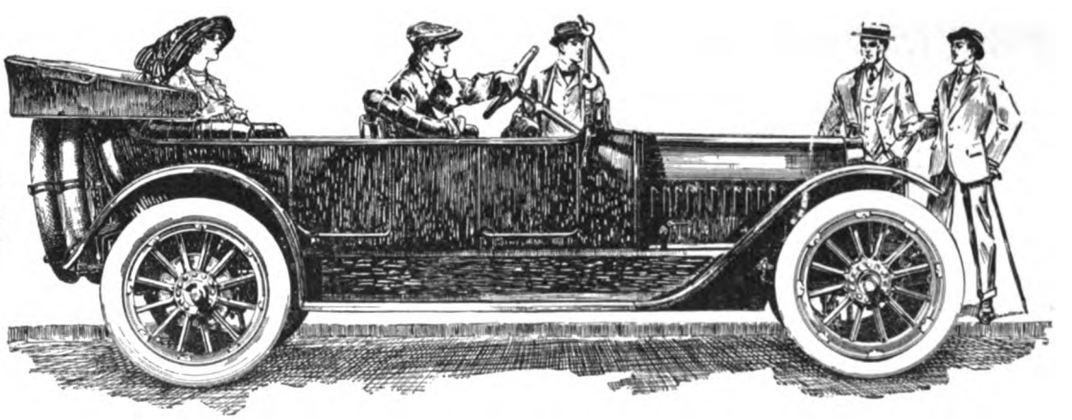
There are three KisselKar Models: 48-"Six" at $2350; 60-"Six," $3150, and 40-"Four," $1850. All fully equipped, electric lighted and started; left hand drive, center control.

Now being shown by our representatives everywhere. See your nearest dealer for demonstration, or write us for Catalog.

KisselKar Trucks—1500 lbs. to 6 tons—are used in over 200 distinct lines of business. Write for Truck Catalog.

KisselKar Service Contract—The KisselKar is sold under a written guarantee of service to owners—a tangible, definite and specific contract that clearly stipulates the scope of KisselKar Service. Ask for a copy.

Every Inch a Car



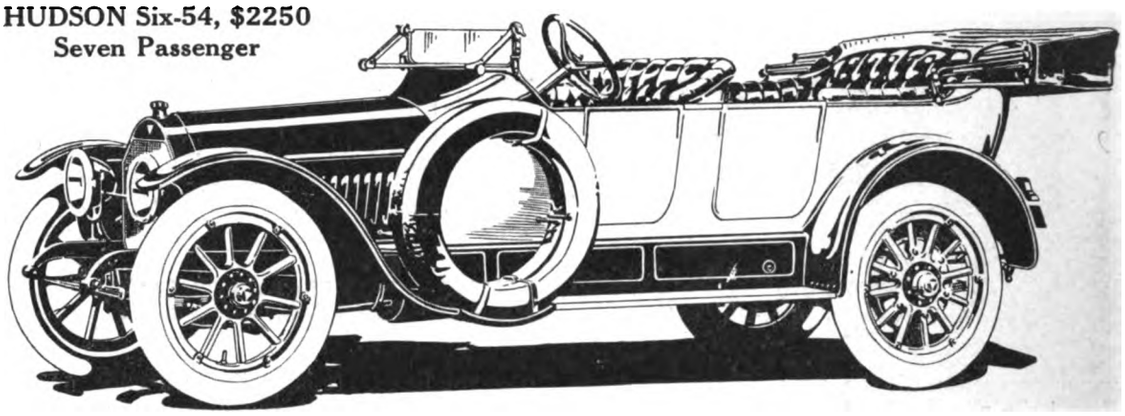
KISSEL MOTOR CAR CO., 159 Kissel Ave., Hartford, Wis.

BOSTON NEW YORK CHICAGO MILWAUKEE KANSAS CITY MINNEAPOLIS ST. PAUL
DALLAS SAN FRANCISCO LOS ANGELES OAKLAND

Philadelphia, Detroit, Houston, El Paso, New Orleans, Washington, Baltimore, Nashville, Duluth, Buffalo, Pittsburgh, Hartford, Conn., New Haven, Albany, Troy, Rochester, Providence, Montreal, Quebec, Toronto, Winnipeg, Calgary, and 300 other principal points throughout America

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HUDSON Six-54, $2250
Seven Passenger



Something Really New---

Six Cylinders---Distinguished Beauty

Never before have HUDSON designers brought out in one model so many advances.

But it happens that Europe, after reaching the limit in fine engineering, has suddenly corrected many faults in bodies.

And America must follow. Some makers will delay, some chafe and protest. But sooner or later we have always followed European vogue. Those who waited found their models obsolete ere long. You remember how it was with fore-doors.

Here is an ideal body type which marks the coming mode. The world's best designers agree on it. All the best foreign makers will this year exhibit nothing but stream-line bodies.

We have not merely copied—we have Hudsonized the type. We have ourselves worked out countless improvements. We have, we believe, the handsomest car you'll see. But the general effect is such as must mark any up-to-date car this year.

Europe is Right

And Europe is right. Look at passing models. Note that abrupt and inartistic angle at the dash. Compare with this model, where the streamline runs unbroken from tip to tip.

Compare the high-hung, top-heavy bodies with this low-hung effect. Compare old-type fenders with these new.

Compare the old way of carrying extra tires, blocking one front door, or on the rear, when the balance of the car is disturbed. Now both front doors are clear and still the tires are where they should be—on the running board.

Note that every door hinge is concealed. Why did we ever have body sides marred by projecting hinges?

Note the left-side drive, the center control, the deep cushions with high backs. You sit in the car, not on it.

Now we have four forward speeds.

We have wide tonneau doors.

We have every operation and control within reach of the driver's hand.

You know that these things are desirable. Now that they have been thought of, and adopted abroad, what car can resist coming to them?

Other New Things

Here are other new features which we have adopted in this new HUDSON Six-54.

A seven-passenger body, where the extra seats fold out of the way.

135-inch wheel base — 36 x 4½-inch tires. Gasoline tank in dash, also an European innovation.

The Delco system of electric self-cranking—the rapid type built especially for this car. Powerful electric lights with dimming attachment.

Speedometer set in dash. Concealed noiseless gears set into the axle.

Yale lock on ignition control.

Rain-vision windshield. Genuine Pantasote top with curtains attached, ready for instant lowering. Electric horn — trunk rack — tire holders — license carriers. Every comfort and convenience known.

Built by Howard E. Coffin and His Engineers

Here too is the latest production of Howard E. Coffin and his great engineering corps. The men who built the former HUDSON Six, one of the greatest successes ever known in this industry.

This is their masterpiece. The largest, finest, strongest car these men have ever built. Their sturdiest car, their most comfortable car, most dependable.

And note the price. Note how this factory, with its mammoth output, has cut the cost of Sixes. Think of a Six of this power and size and room selling for $2250. Even one year ago such a price was unthinkable.

See This Innovation

Your local HUDSON dealer has this car on show. Go see it, if only to see the trend of design in motor cars. Compare it side by side with old-style cars and judge which you want to drive.

See it now—while it's new.

Our catalog on request.

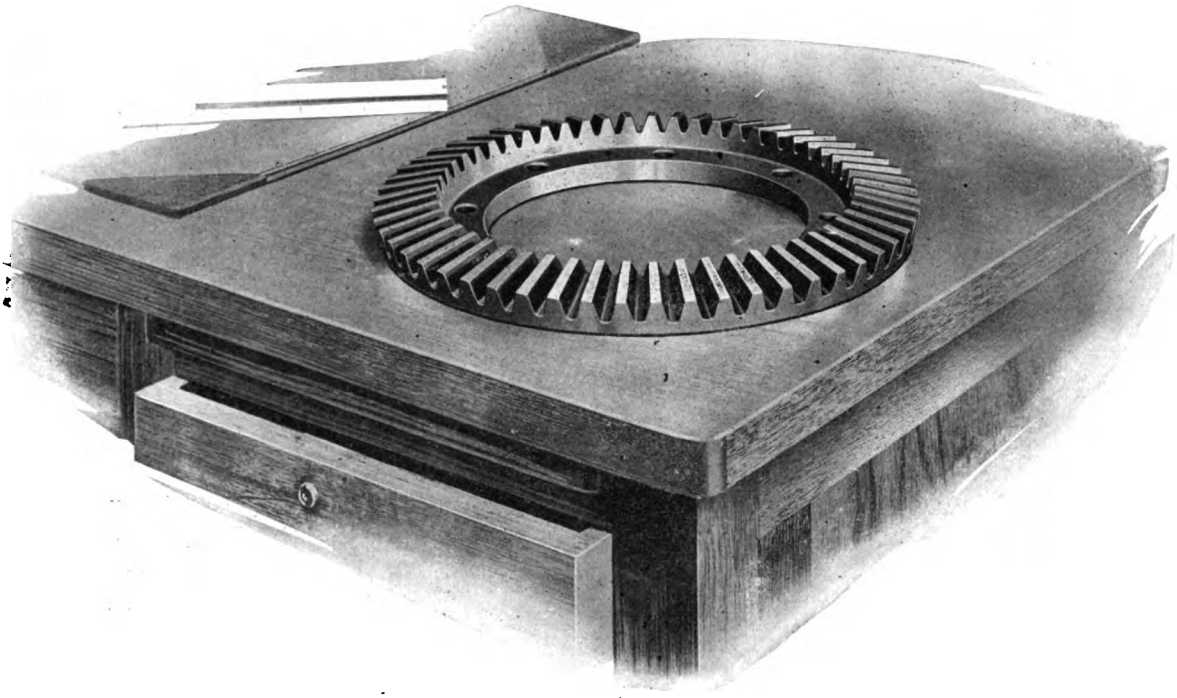
HUDSON Motor Car Company

7711 Jefferson Ave., Detroit, Mich.

We Have Never Been Able to Get Six-Cylinder Smoothness in a Four

259

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The Teeth that Always Fit

Part I

The Gear with the Polished Teeth

ON the manager's desk lay a gear with teeth that shone like silver. 'Twas the first thing that caught the motor car engineer's eye when he called at the Timken-Detroit plant. The first question that he asked concerned the gear with the polished teeth.

TIMKEN-DETROIT · AXLES ·

It was explained to this engineer, for one of the highest grade cars, that Timken-Detroit gears are ground by a Timken-patented process which corrects all the microscopic inequalities left by even the finest gear cutters.

He was taken out into the factory and shown the special Timken-built machines at work. He saw at a glance that the theory of perfect master gear and master pinion controlling the gears to be ground was sound.

Next day he brought the production manager of his plant to see the wonderfully simple and efficient machines.

The Proof Demanded

The process looked right, but they asked foy proof of results.

"Send us," we said, "some of your gears that have failed to pass your inspection. Mark them secretly and, after they're ground and returned, mix them with others and send them through your testing department again."

This was done. Ten gears that had failed to pass were sent us to grind. They were put through the Timken-Detroit gear grinding process and returned.

Every one of these gears passed inspection

The inspector was asked to pick out the ten best gears in the lot. He picked out the ten that we ground.

The Result

Today the driving and pinion gears in each of their cars are ground by the Timken-Detroit process.

The company has gained because the process corrects faults that formerly scrapped many gears.

The car owners have gained because all the gears are now perfect. Friction has been reduced and noise practically eliminated.

Applied to Timken-Detroit Axles

Every gear in the Timken-Detroit Axle is ground by this special process.

Timken-Detroit Axles are the only axles equipped with gears ground by a process that produces the results which so thoroughly convinced this engineer and this production manager. (Names will be given on application.)

In the next issue of this magazine you'll find Part II of this series of talks on "The Teeth that Always Fit."

Timken-Detroit Axle Co.
Detroit, Michigan

(21)

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"American" Axles

Furnish the Logical Mounting for the Finest Known Type of Worm Drive

IT is a source of extreme pride to us, that we not only are producing "American" Full Floating Axles containing the Lanchester-Daimler Worm Drive for gasoline and electric pleasure cars, but we hold the sole rights as axle manufacturers for this gear in America.

The development of this type of gear began much earlier in England and the Continent than in America. The conspicuous and acknowledged leader of the type was the Lanchester-Daimler.

That such a gear was certain to be immensely popular in America was easily foreseen. Its silence, its remarkable efficiency and its marvelous record for mileage and endurance were beyond argument.

Careful study of the leading foreign worm gears proved to us that the Lanchester-Daimler was easily the best of this remarkable type. Our own corps of engineers thus unanimously confirmed the verdict that had been awarded by foreign manufacturers and car owners.

We were convinced that the Lanchester-Daimler Worm Drive stood, in its class, on precisely the same high plane in Europe that is universally accorded to our Bevel Drive type of axles in America.

It was clearly proved that the Lanchester-Daimler is more efficient than any other worm drive, by reason of its superior excellence of design, and certain constructive features peculiar to it alone.

As one prominent American manufacturer has said: "When the Lanchester-Daimler Worm Drive Was placed in an American Axle, the highest possible standard for the worm drive, as applied to gasoline and electric pleasure cars, was at once established in America."

In American Axles only can you have the option of the highest class of Bevel or Worm Gears. Both types are fitted throughout by us with the best types of foreign made ball-bearings.

The adjusting and full floating features of "American" Axles are fully covered by our own patents and by shop rights from other patentees

THE AMERICAN BALL-BEARING COMPANY, Cleveland, Ohio

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THE VITAL POINTS

of your motor car—the transmission, the carburetor, the engine, etc. require duplicate parts of uniform accuracy.

We've had such a long experience in serving builders of motor cars and accessories, that our knowledge of their requirements is intimate. That's why NAMCO special milled products will serve your purpose so well.

NAMCO parts have clean threads, accurate diameters and smooth finish. They assemble easily, fit just as you want them to, and stand all the strains to which they are subjected.

You can get any kind of duplicate milled parts up to 2¼" diameter quickly. Our unusually large production capacity and facilities enable us to give exceptional deliveries.

For special parts, send samples or blue prints. Mark them for "Quotation Dept." and price and delivery will be promptly furnished.

THE NATIONAL-ACME MANUFACTURING CO.
AUTOMATIC SCREW MACHINES AND THEIR PRODUCTS
SIXTH CLEVELAND CITY

NEW YORK, 77 White Street
CHICAGO, 23 So. Jefferson St.
BOSTON, 141 Milk St.
DETROIT, Majestic Bldg,
ATLANTA, 3rd National Bank Bldg.
MONTREAL, in St. Henri at G. T. R.

Warehouses: New York, Chicago

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SHELDON AXLES and SPRINGS ARE SALES HELPS

Every manufacturer endeavors to build into his car those selling points which will assist the dealer in his sales.

Every unit of national reputation in a truck helps to sell that truck. The public knows the value of that unit because the manufacturer, who is a specialist in that particular subject, has convinced them of its splendid qualities.

SHELDON AXLES and SPRINGS have a nation-wide reputation. Their quality has been proved in actual service. Their splendid design and superior mechanical construction is an accepted fact in engineering circles. Only the best scientifically treated materials are used. In fact, so persistently has the public been told—and so well do the engineers know—these qualities that the synonym for axles and springs is "Sheldon."

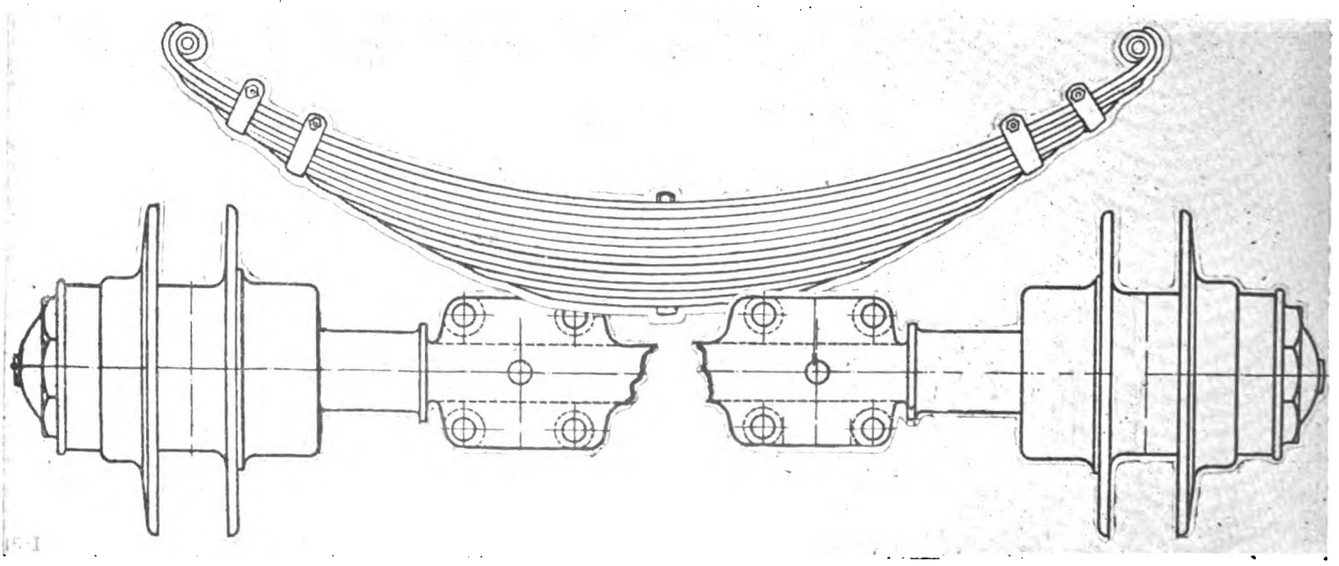
You *can* utilize this reputation. Why not build it into your trucks? You can thus have it help you sell your car.

SHELDON FOUNDATIONS for every type of service.

Axles **Radius Rods** **Transmissions**
Brake Equipments **Jack Shafts** **Steel Wheels**
Worm Drives **Springs**

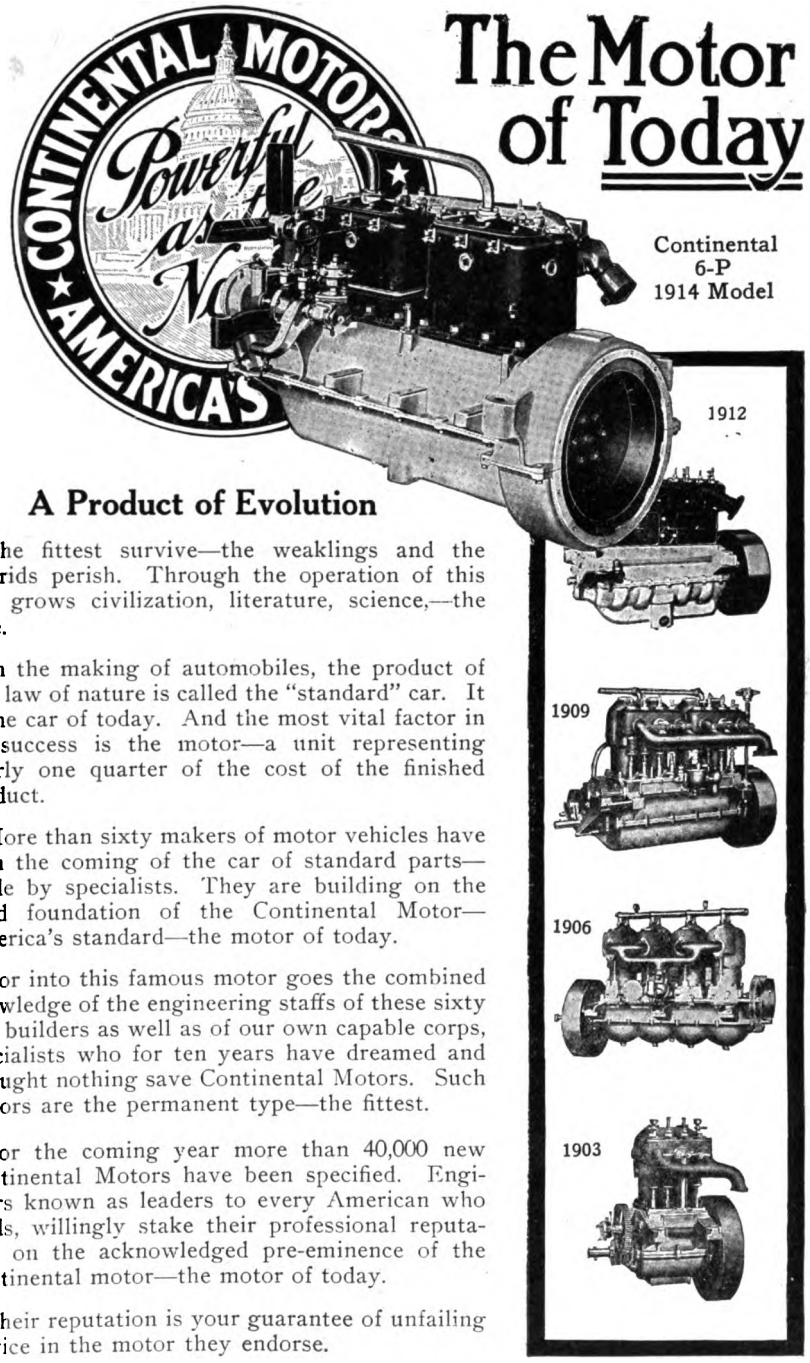
SHELDON AXLE COMPANY, Wilkes-Barre, Pa.

Chicago Office: 68 E. 12th St.
San Francisco Office: 444 Market St.
Detroit Office: 1215 Woodward Ave.



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Continental Motors



A Product of Evolution

The fittest survive—the weaklings and the hybrids perish. Through the operation of this law grows civilization, literature, science,—the race.

In the making of automobiles, the product of this law of nature is called the "standard" car. It is the car of today. And the most vital factor in its success is the motor—a unit representing nearly one quarter of the cost of the finished product.

More than sixty makers of motor vehicles have seen the coming of the car of standard parts—made by specialists. They are building on the solid foundation of the Continental Motor—America's standard—the motor of today.

For into this famous motor goes the combined knowledge of the engineering staffs of these sixty odd builders as well as of our own capable corps, specialists who for ten years have dreamed and wrought nothing save Continental Motors. Such motors are the permanent type—the fittest.

For the coming year more than 40,000 new Continental Motors have been specified. Engineers known as leaders to every American who reads, willingly stake their professional reputation on the acknowledged pre-eminence of the Continental motor—the motor of today.

Their reputation is your guarantee of unfailing service in the motor they endorse.

This is one advertisement in a series that is helping to sell cars Continental equipped. Watch them and keep posted.

We are telling the American public who motor or use motor trucks, the importance of the motor in the car and the dominating position held by the Continental.

This is benefiting car maker and dealer who build on the firm foundation of Continental Quality and Prestige.

It is creating a demand for Continental equipped cars which will make them doubly strong in 1914 — the crucial year.

Get the jump on competition — specify Continental.

Continental Motor Manufacturing Company

Largest Exclusive Motor Builders in the World

Factories: Detroit and Muskegon, Michigan **Detroit, Michigan**

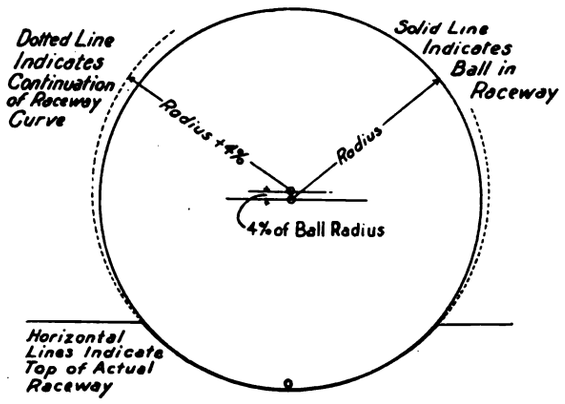
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CAPACITY
GURNEY
ENDURANCE

Again Why-

do we so persistently emphasize the matter of RACE CONTOUR?

Because it is really the most important single item among the things that determine the real quality of a ball bearing, and because among the several essentials of ball bearing efficiency this one is nearly always forgotten or overlooked by the user and slighted or ignored by the maker.



The raceway should be of the closest possible conformity to the curve of the ball. It has been found by careful and exhaustive experiment that the race curvature may approach to within 4 per cent. of the curvature of the ball before friction begins to increase materially. Now—with this close contour the steel of balls and races has to yield but very little to gain a considerable area of contact and so realize great increase in load capacity. This slight springing of the steel is safely within the elastic limit. In the raceway conforming less closely to the ball the steel must be distorted much more to realize an equal area of contact. The elastic limit is soon reached and the steel, both of balls and races, soon breaks down.

This is obvious: the greater the area of contact the greater the load that may be borne—the closer the conformity of race contour to ball curvature the greater will be the area of contact—hence, the closer the race contour to ball curve the greater the load capacity. Experience has taught us that we may conform as closely as within 4 per cent. of the ball curve without objectionable friction.

Of course, all these considerations apply with equal or even greater force to irregularity of race contour. If there is the slightest ridge in the raceway the steel in this ridge will receive excessive punishment. And it will likewise give excessive punishment to the balls. Thus both raceways and balls will fail to give the full measure of capacity and endurance.

In the GURNEY factory these incontrovertible truths stand among the cardinal tenets of our working religion. And this in some measure explains the unequaled **CAPACITY** and **ENDURANCE** of the GURNEY BALL BEARING.



Gurney Ball Bearing Co.

Jamestown, New York

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More Than 100 Revolutions Per Minute



This new Auto-Lite Electric Starting Motor for automobiles is acknowledged to be one of the simplest and most efficient motor starters so far produced.

Its superiority is due to its great turning power—the rapidity with which it will spin a large engine and the small amount of electric current that it uses to do it.

For example—this motor will spin a 6-cylinder engine, 3¾ in. bore x 5¼ in. stroke, compression 60 pounds, at a speed of 100 revolutions per minute (absolutely insuring positive starting), with a current demand of 95 amperes at 6 volts. In other words, here's an electric starting outfit that is correct in itself—well made mechanically—well protected—simple in construction—easy to inspect—a motor that will crank your engine every time, winter or summer.

AUTO-LITE ELECTRIC STARTING and LIGHTING SYSTEM

"As Sure As the Whirl of the World"

A WORD OF EXPLANATION TO THE AUTOMOBILE OWNER

While our electric lighting generator and system can be easily installed upon the average car without difficulty, an electric starting motor is more difficult to attach as it requires skilled labor and necessitates a certain amount of machine work, and also requires considerable space which is not allowed for on a car not designed for a system of this kind—hence, we do not solicit orders for our starting motor from individual owners.

Your 1914 car, however, should carry the Auto-Lite system as standard equipment, no matter what price you pay. Due to its already widespread use, manufacturers can equip with the Auto-Lite if you so specify.

Insist on having the complete Auto-Lite system on your next car.

GET THIS BOOK

Send for our "Handbook on the Care and Operation of Automobile Electric Systems," a book so full of interesting information on all modern electric systems that no automobile owner can afford to be without it.

Explains in detail, functions of the various parts—how to locate and remedy troubles of all kinds, embraces all electrical automobile systems.

The large operation chart which it contains is alone worth the price.

Regular price 50c.

Will be sent to you for 10c. in stamps if you use this coupon.

The Electric Auto-Lite Co.
116 Michigan St., Toledo, Ohio

BRANCHES:
New York Detroit Kansas City San Francisco

But Note This!

The Auto-Lite Electric Generator can be applied to almost every automobile now in use.

If you wish to put an electric lighting system on your car, write the Installation Engineer, care of the Electric Auto-Lite Company, Toledo, Ohio.

He will give your request his personal attention and answer your questions fully.

This Coupon Saves You 40c.

The Electric Auto-Lite Co.,
116 Michigan St., Toledo, Ohio.

Enclosed find 10c. in stamps for which please send me your handbook.

Name.....

Address.....

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SPRINGFIELD
CONVERTIBLE BODIES

Springfield Convertible Bodies are the embodiment of refinement in the matter of lines, material, finish and ease of adjustment.

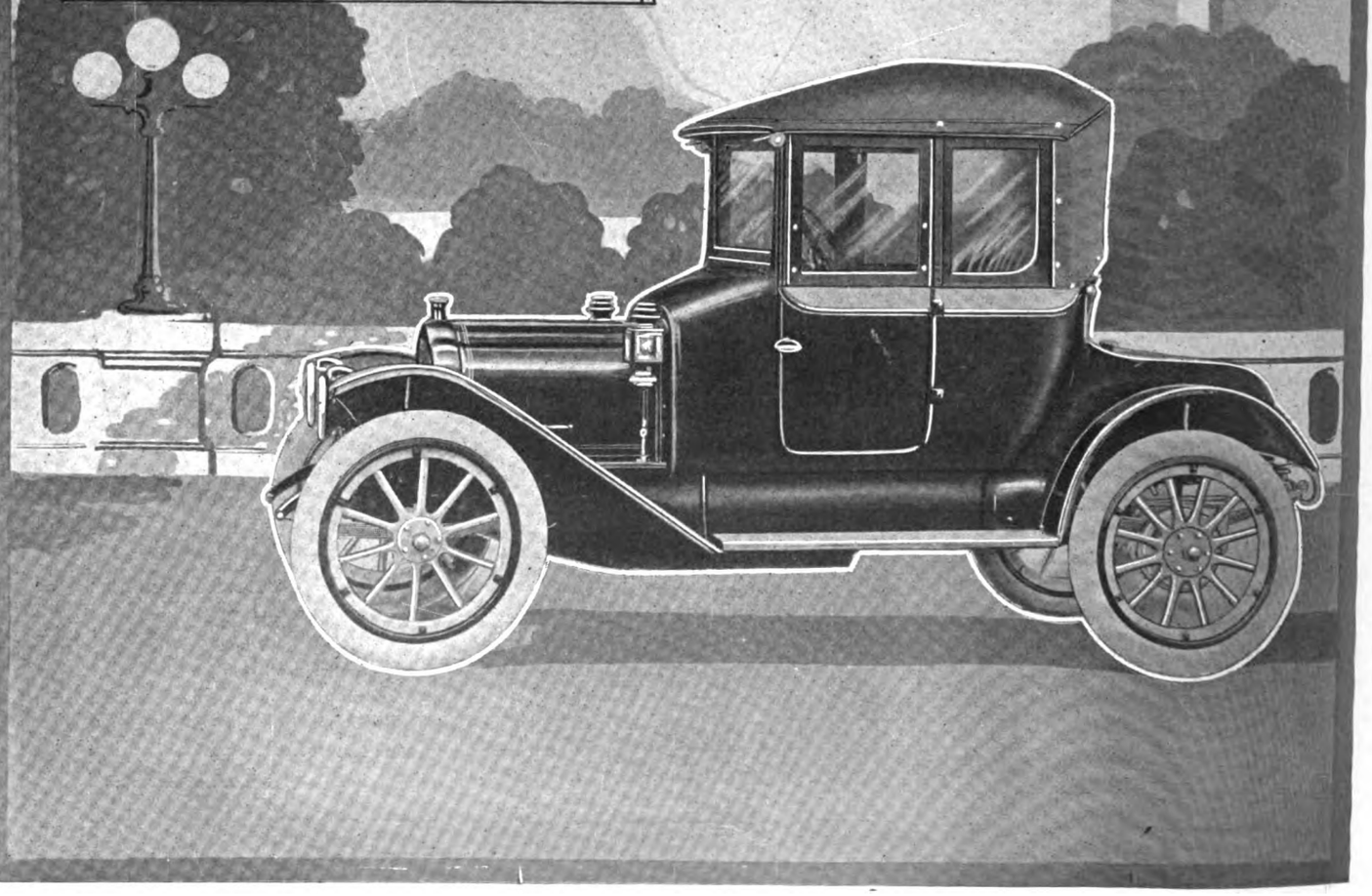
The runabout convertible body shown here illustrates one extreme of a line that goes on up to the highest grade limousine, landaulet and town car.

Even this faithful reproduction cannot approximate the beauty and convenience of the equipments as they actually appear. They must be seen to be fully appreciated.

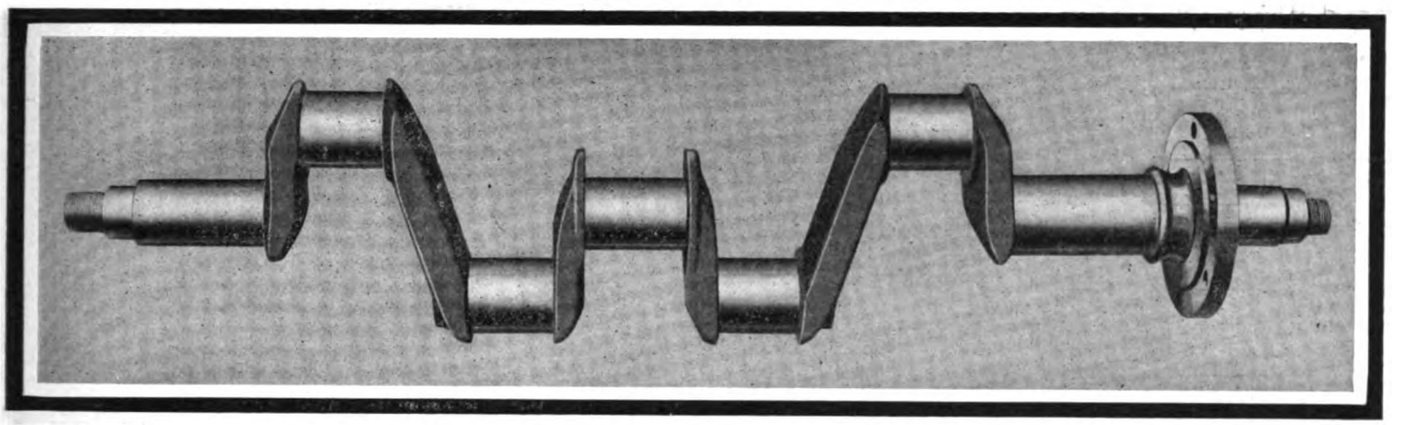
The ease of operation is remarkable; the tops are rapidly raised into position, the doors are opened, the hinged glass swung up into position, the remaining windows are removed from a box in the back of the front seat and buttoned into position, completely enclosing the car in less time than an ordinary top can be erected and the curtains adjusted.

Write for brochure of reproduced photographs.

SPRINGFIELD METAL BODY CO.
Springfield, Mass.



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Your Crankshafts must be machined right—and delivered right on time

In these days of big outputs, quality and deliveries are vital. It is impossible to take chances.

Questionable work—machining that is not right up to standard in trueness and accuracy—has no place in our shops. We insist upon exactness and we back our insistence with an elaborate and thorough inspection system.

Poor work has no chance to squeeze by in the Michigan Crankshaft Company's plant. That explains why our records show ***less than two per cent rejects*** on the part of manufacturers for whom we work.

Frankly, we claim no particular merit for being extraordinarily particular; it is simply good business. We realize that both our present and our future depend on maintaining high standards, so we scrutinize every detail.

Located at Lansing we have the best shipping facilities—and low taxes, low overhead expense. This means that we can afford to and do deliver better quality of workmanship for the same or less money.

We are not after the trade that is known as "cheap" but we can offer excellent reasons—with satisfactory proofs—why manufacturers seeking right deliveries and high quality work will find it mighty profitable to do business with us.

Send us blue prints and details and we will do the rest.

MICHIGAN CRANK SHAFT CO.
LANSING, MICH.

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THE ATTERBURY LINE



Three things are essential to the man or group of men who wish to engage successfully in the transportation sales business:

Business ability first—this you must possess in a greater degree in selling trucks than in selling pleasure cars. Your sales will be made to business men and upon a business basis. This is an essential you must provide yourself; the best truck ever made cannot sell itself.

Next—a business-like agreement with the concern whose line of trucks you sell, regarding territory, terms, discounts, parts stock, etc., etc.

Then, a line of trucks to sell which are adaptable to the majority of business requirements, trucks whose first cost is compatible with their length of life so that their charge-off for depreciation is within reason. The value of concentration in business will readily show the wisdom of handling a complete line, from delivery cars to heavy-duty trucks, all of one make.



The Atterbury Motor Car Co. would like to communicate with business men who contemplate entering the truck sales field. The Atterbury sales agreement is one of the most business-like in force today and appeals to business men far more strongly than others apparently more liberal. The Atterbury Company has always believed that an agreement which was unbusiness-like in its liberality was one of the leaks which sooner or later would sap the parent company's vitality, and for that reason to be avoided by the company and dealer alike.

As a preliminary to any future negotiations, write for our booklet describing the various Atterbury models and details of construction. One of the most convincing proofs of the desirability of signing up with the Atterbury Line may be had by a visit to the Atterbury Shops. You are assured of a cordial welcome and courteous treatment.

The Atterbury Motor Car Company
BUFFALO, N. Y.

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Jeffery-Dewitt SPARK PLUGS in the Making

Scene III. "Throwing" department. Here the clay, previously blended by the famous Jeffery-Dewitt process, is thrown up into cylindrical blanks which are afterwards partially dried, placed on spindles and turned to proper dimensions. The throwing gives the clay a "wrapped" effect, which is one of the reasons why Jeffery-Dewitt Spark Plug Porcelain resists the high voltages.





At 75c. These Two Plugs Lead the World

The Conical Type Spark Plugs, so called because the cylinder end of the porcelain is conical in form, give excellent results. They have gained wide popularity.

The Petticoat Type, also named from the shape of the cylinder end of the porcelain, affords extra insulating surface around the central electrode. For oily motors, this plug with the closed end is the best plug made.

Both Conical and Petticoat types may also be had with platinum points, at 50 cents extra.

Sooner or later—every man with a balky motor becomes a *J-D* patron, for *J-D* plugs are the standard cure for over-oiled and dirty engines. There is—in the *J-D* line—a type for every kind of motor, for every ignition defect, for every motorist's preference, for every pocketbook.

J-D plugs are as good for bad motors as they are superlative for good motors. As a result—they oversell every other make. *J-D* dealers are everywhere recognized as ignition experts—as specialists in spark plugs.

J-D dealers reap the rewards of this popularity. The merit of the *J-D* line puts dollars in their pockets. If you are not already selling *J-D* plugs, write at once and find out why you ought to.



JEFFERY-DEWITT COMPANY

65 Butler Avenue, Detroit, U. S. A.

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How Often Do Passing Tourists Stop and Ask You the Way?

Every place of business should have handy a copy of the

Automobile Blue Book

Get people in the habit of coming to your store for road information and they will follow the habit and buy things from you.

The greatest touring months are now coming and all the 1913 books are here in stock ready for immediate shipment.

Get Yours Today

Sent prepaid on receipt of $2.50 per volume---address either office

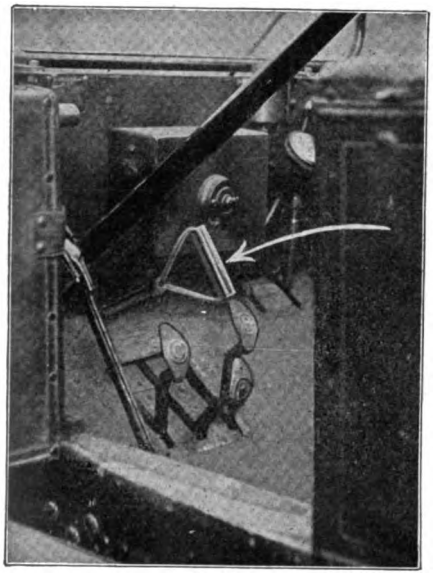
Vol. 1—New York State and Adjacent Ontario.
Vol. 2—New England and Coast Provinces.
Vol. 3—New Jersey, Pennsylvania and Southeast.
Vol. 4—The Middle Western States.
Vol. 5—From the Mississippi to Pacific Coast.

Motor World Publishing Company, **1600 BROADWAY NEW YORK**



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STOP!---SAVE MONEY



$9.00--FORD ENGINE STARTER--$9.00

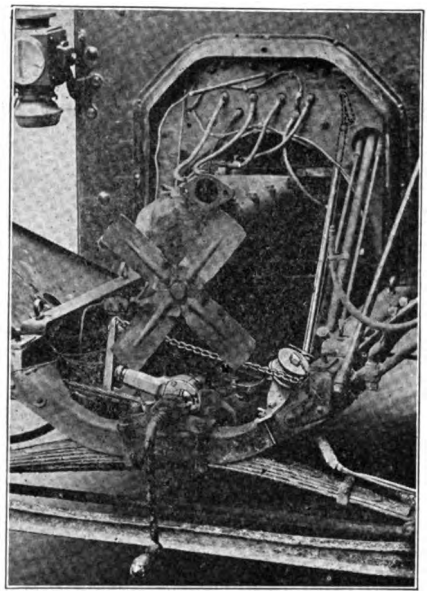
"It is out of sight," under the hood. All that shows is a small hand lever on dash. You do not have to leave your seat to start your FORD MOTOR when equipped with same.

All that is necessary is to pull the lever. Will POSITIVELY TURN YOUR MOTOR OVER EVERY TIME. With this starter YOU HAVE TWO STARTING DEVICES. YOU DO NOT HAVE TO REMOVE THE CRANK. IT STAYS ON.

FOR THE NEXT 60 DAYS TO THOROUGHLY INTRODUCE OUR STARTER WE WILL MAKE THE ABOVE PRICE.

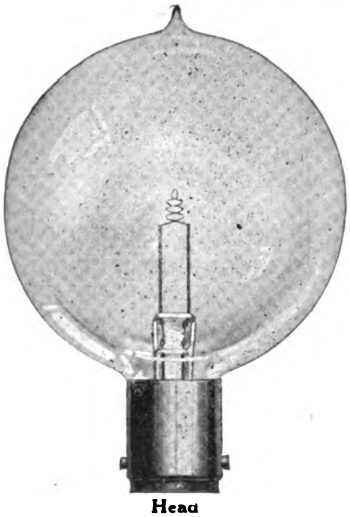
NO MORE BROKEN ARMS. BACK KICKS ARE DANGEROUS.

DIRECT ON RECEIPT OF PRICE.

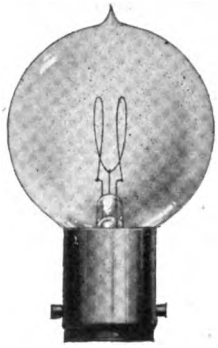


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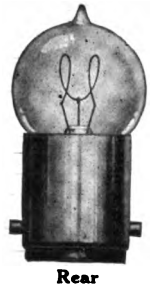
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Side



Rear

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We co-operate closely with car builders and the makers of lighting systems in the manufacture of Edison Mazda (drawn wire tungsten) Lamps for automobile service. When **Edison Mazda Lamps** are used, car owners are assured of getting the right kind of lamp to meet the requirements of different lighting systems.

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We will not, however, endanger the reputation we have made by making radical changes from established design. In standing by this resolve, we have, on rare occasions been obliged to lose business—something to be regretted, but none the less necessary.

Mayo Radiators are built to hold the engine at an even temperature—not too hot to endanger its usefulness, nor too cool to lose its efficiency. "Tolerance" in change of design is therefore liberal—but it has its limits.

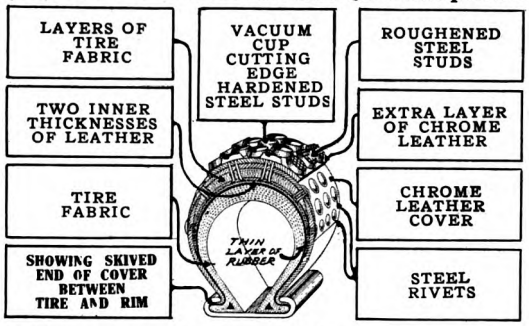
If you, as the man who has sold the car, find yourself in "hot water" so to speak, with a leaky, inefficient radiator and a "superheated" customer, then be sure this car was not equipped with a Mayo Radiator. Dealers who sell cars Mayo equipped know that the radiators will stand up under any unfavorable condition short of a blow with a hammer or a bad collision.

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GUARANTEED FOR 10,000 MILES
Puncture-proof, Blowout-proof
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This shows construction that makes Guarantee possible



A Written 10,000 Mile Guarantee Accompanies Every Tire

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To remove all doubt that might arise in the purchaser's mind and to back up our statements we will allow **10 days free trial** on the first set that goes into each town, and if these tires are not perfectly satisfactory in every way they may be returned to us any time within 10 days and we will cheerfully refund the entire purchase price.

Before we place an agency we want a set of these BRICTSON PNEUMATIC TIRES in each town—Who will be the first one to order?

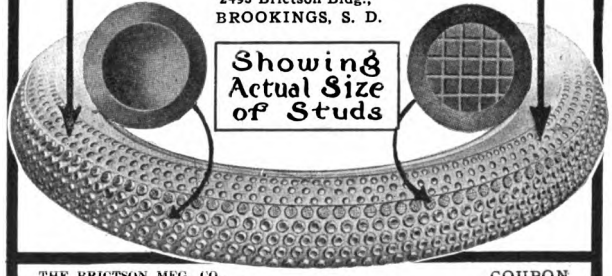
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If you are not in need of new tires and the fabric in your present tires is still good, we can rebuild them the Brictson way, making them Puncture-proof—Non-skidding—Blowout-proof—and Oil-proof and Rim-cut-proof.

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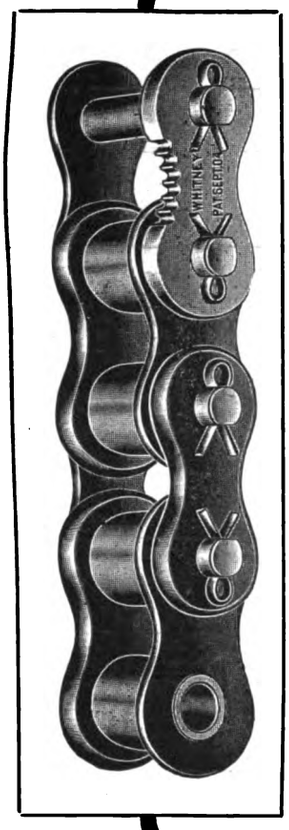
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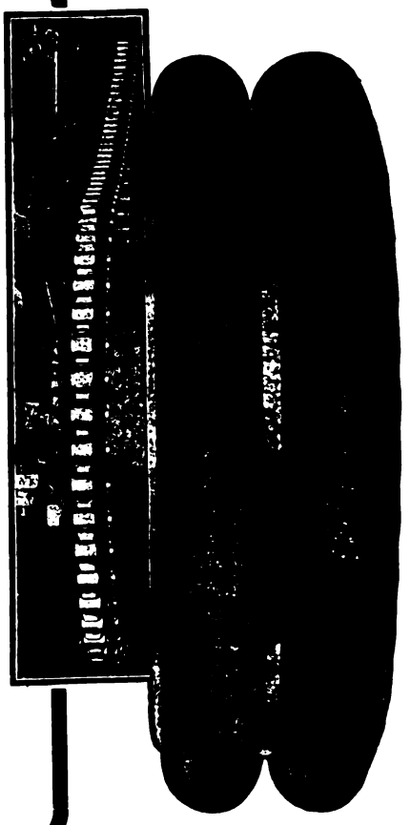
"Whitney" Chains are made from steel best adapted for the purpose, carefully hardened and calculated to resist the most wear, while in the matters of machining and assembling the utmost care is exercised and thorough inspections and tests characterize each process of manufacture. Their future service, however, depends upon the accuracy of sprockets, care, lubrication, alignment and adjustment, for the best chain in existence cannot withstand the evil influence of improper conditions and give best results.

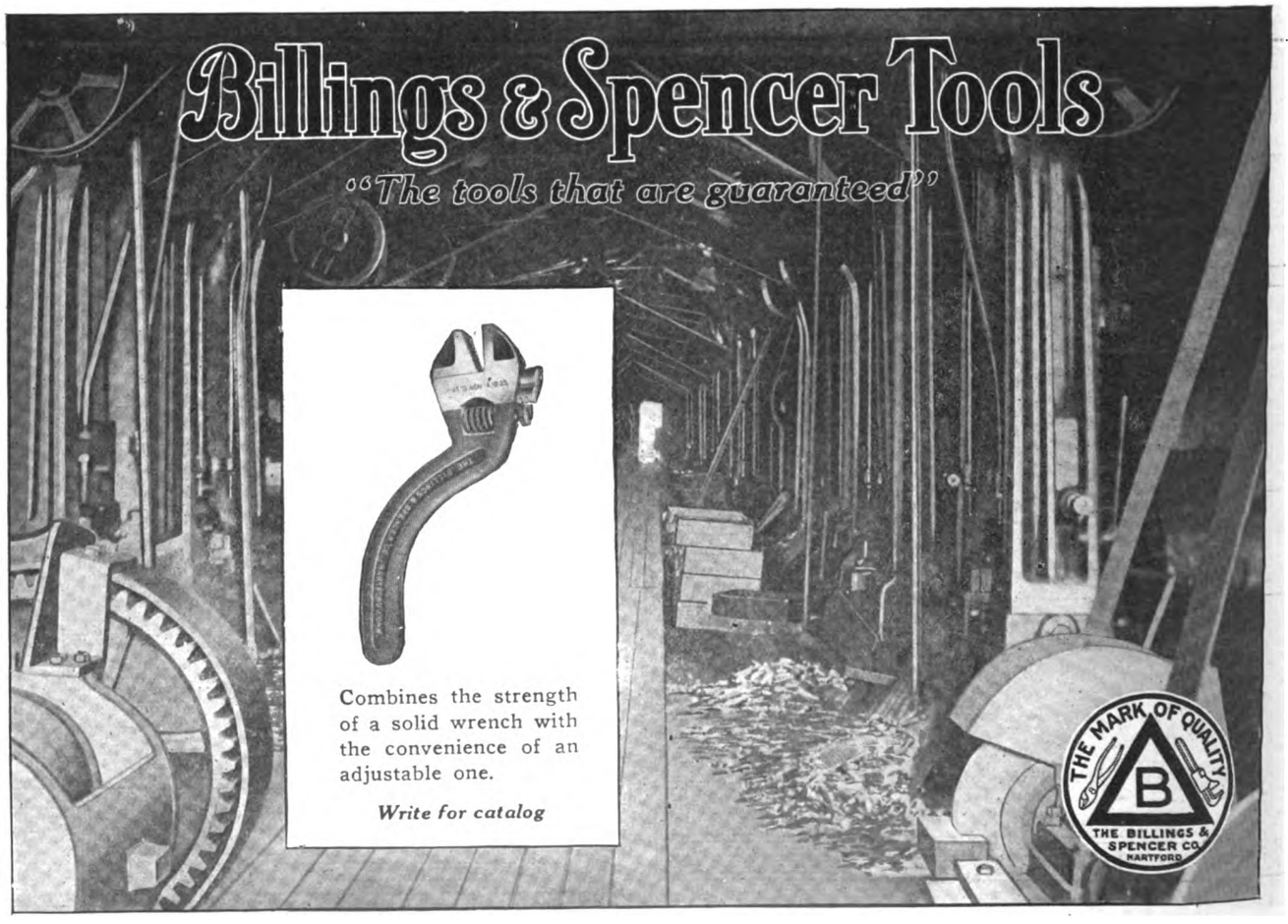
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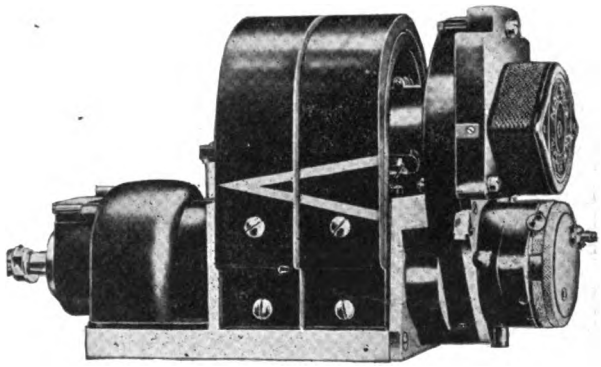
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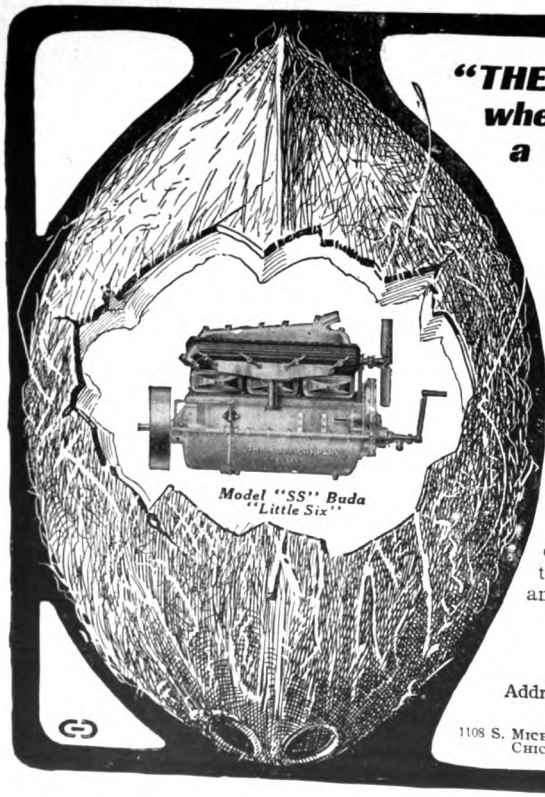
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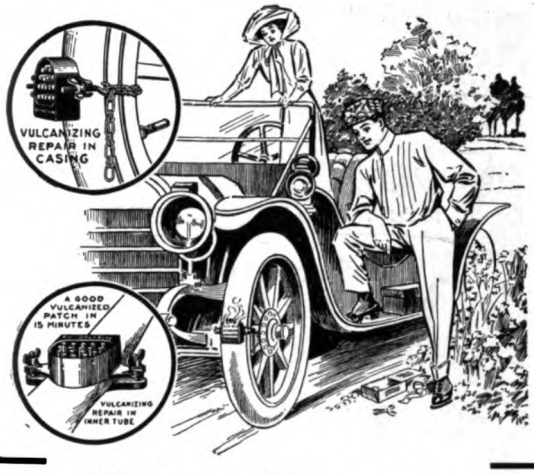
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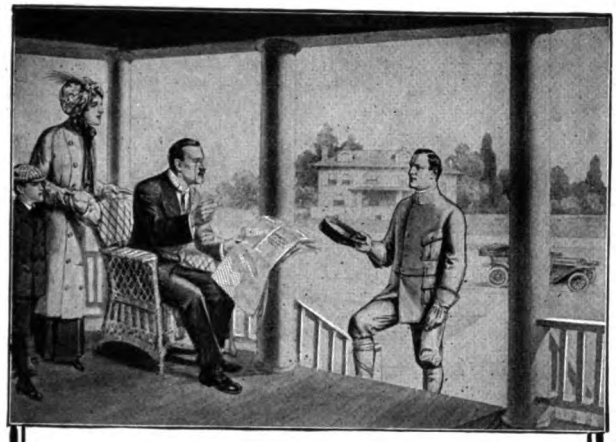
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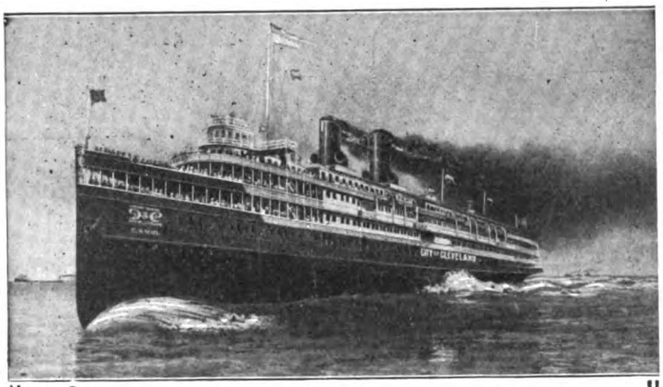
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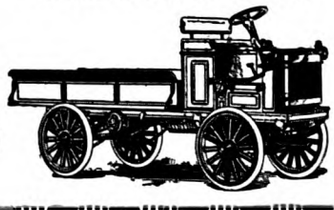
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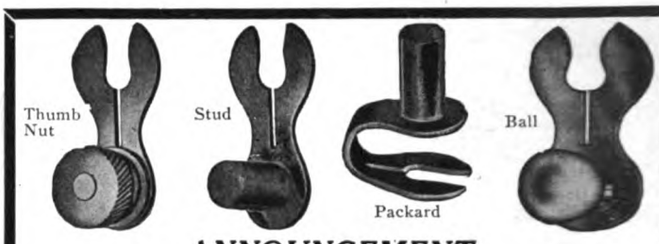
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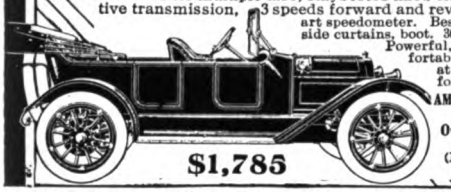
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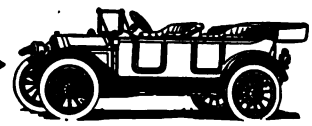
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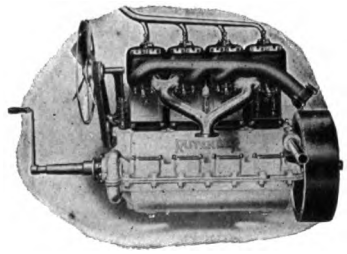
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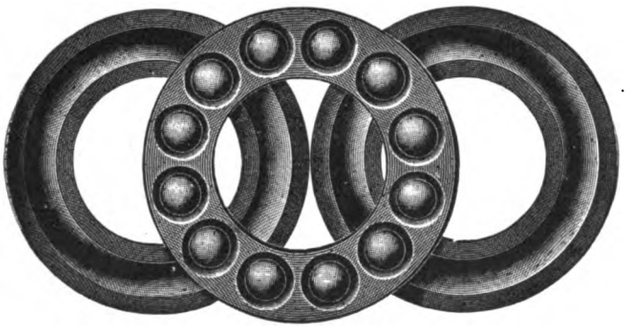
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Guaranteed Speed — Mile in 51 Seconds

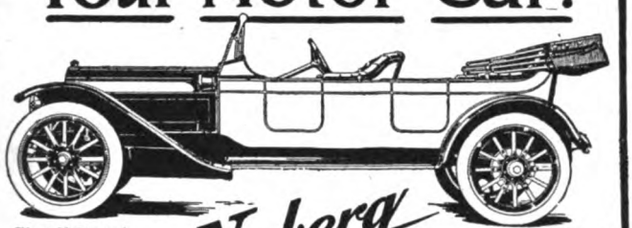
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Water-proof case mortises into pillar, ⅞ in. x 1⅝ in. x 1¼ in. deep.
Clearance in opening, 11-16 inches.



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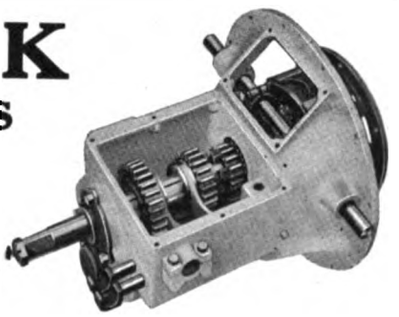
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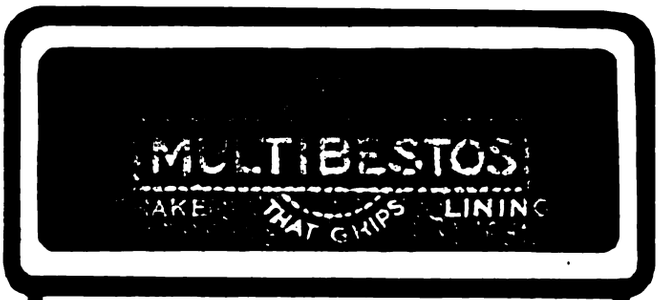
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Brightens and renews all leather seats and cushions. Will not wash or rub off. Dries in twenty minutes. THE COLUMBUS VARNISH CO., Columbus, Ohio.

THE SAFETY STEERER.
Train your car to keep the road. There is just the same difference between driving a car equipped with a Safety Steerer and one that is not, that there is between driving a well trained carriage horse and an awkward colt. Tried and tested for two seasons. Increases the safety of driving 100%. Influence of steerer automatically decreases on corners. Easily attached. Special adjustable Ford steerer, full nickel plated, $10.00. Privilege of return if not satisfactory after ten days' trial. 55% discount on first and succeeding orders if yours is the first order from your locality. T. S. HARRIS, Waverly, Ill. Div. A.

FOR SALE AT VERY LOW PRICES.
Fairbanks stationary 25 H.P. gas engine; Beaudry 2400-lb. power hammer; Rahn-Carpenter 18" lathe; all in perfect condition. Write COLUMBIA VEHICLE CO., 213 L St., S. W., Washington, D. C.

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Quality Windshields
Auxiliary Seats, Bumpers and Gas Starters
POLSON MANUFACTURING CO., Buffalo, N. Y.

METZ "22" ROADSTER $475
The "gearless car"—no clutch to slip, no gears to strip—completely equipped, fully guaranteed. 4-cylinder, 22½ H.P. water-cooled motor, Bosch magneto, artillery wheels, best quality clincher tires. Makes 5 to 50 miles per hour, 25 to 32 miles on 1 gallon of gasoline. Great hill climber. You can secure EXCLUSIVE SALE in your territory. Write for Book "B."
METZ COMPANY, Waltham, Mass., U. S. A.

AMERICAN KUSHION KORE
A tire filler 10 to 20 per cent. lighter than any other tire filler. A big proposition for dealers who are on the alert for more and better business. Write for details.
AMERICAN KUSHION KORE TIRE CO.
Buffalo, New York

Guide **Motor Lamps**
(ELECTRIC)
Write for "Guide Books" Nos. 1 and 6
GUIDE MOTOR LAMP MFG. COMPANY
CLEVELAND, OHIO (1)

Schafer Ball Bearings
Famous for Their Durability
BARTHEL & DALY, 42 Broadway, New York

AUTO-TOP FABRICS
OF EVERY DESCRIPTION
Samples and Prices on Request
L. J. MUTTY COMPANY, Boston

GOODYEAR
AKRON, OHIO.
This name on Automobile Tires and Rubber Accessories signifies inherent qualities of material and workmanship that insure the maximum of service at the minimum of expense. (673)
THE GOODYEAR TIRE & RUBBER COMPANY, Akron, Ohio


PERFECTION SPRING COMPANY
Specialists in **Spring Suspension** High Grade Only
CLEVELAND, OHIO

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Now standard on fourteen makes of America's leading cars and still growing. Send for blue-prints and specifications—or consult our engineering department.
HESS SPRING AND AXLE COMPANY
CARTHAGE, OHIO

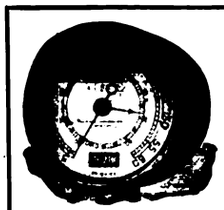
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JENCICK MOTORS For Motor Trucks
from base to spark plug, have features that are "Different and Better."
JENCICK MOTOR CORPORATION, Port Chester, New York


MOTZ Cushion Tires
For Pleasure Cars and Light Delivery Cars
Send for Booklet 58
A—Shows *double*, notched treads.
B—Shows undercut sides.
C—Shows slantwise bridges.
D—Shows absorbing means when passing over an obstruction.
The Motz Tire and Rubber Co.
Executive Office: Akron, Ohio
Service Stations in All Principal Cities

FEPS CARBURETOR
"A Giant in Power —A Miser in Fuel"
25% to 50% more mileage
Write for illustrated, descriptive booklet
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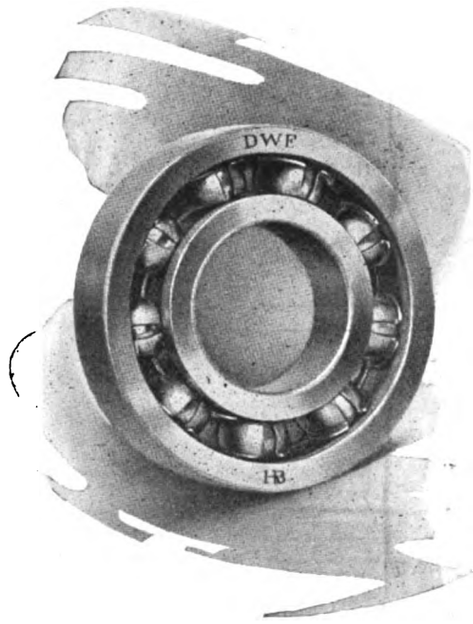
The Bush Radiator
THE BUSH MANUFACTURING CO.
HARTFORD, CONN.

Dealers! If you want to cash in on a competent PROFIT-builder write TODAY for circular of this new labor and tire saving motor driven tire pump. Of proved superiority! Most of the prominent car manufacturers have adopted it either as regular or special equipment. Only plunger-diaphragm pump. Goes on easy, keeps oil from tube. Every motorist needs and buys one when he sees it. We also make portable garage pump on same principle.
Write today!
Give make and model of car.
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"The Speedometer of Quality"
Special features that eliminate speedometer troubles. Send for the booklet.
RELIANCE SPEEDOMETER COMPANY
134 Eliot St., Boston, Mass.

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will help you increase your business while benefitting your customers. We will send any responsible dealer a pair on 30 days' trial. Write now. Good Agents wanted for unoccupied territory.
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H B — D W F

THE first generally successful ball bearing was the direct product of rigidly scientific investigation conducted by the German Small Arms & Ammunition Works (the D. W. F.) of Berlin.

¶ We were pioneers in the production of annular ball bearings. Our manufacturing facilities, consisting of Plant No. 1 (the D. W. F.) of Berlin and Plant No. 2 at Philadelphia are the largest and best equipped of their kind in the world.

¶ Those manufacturers who prefer to use Hess-Bright Ball Bearings on the cars they make are assured that we never will relinquish the distinction of producing the highest grade ball bearings known.

THE HESS-BRIGHT MANUFACTURING CO.

PHILADELPHIA

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IF A CAR IS KLAXONIZED the manufacturers say so. In their advertisements, or in their catalogues.

When the car's list of equipment contains simply the words "electric horn" the chances are the horn is a "buzzer." Knowing the bulb-horn is no good and out of date, car manufacturers have sought the cheapest way in which they can say "electric horn" - taking the chance that you won't look too carefully at it until the car is sold.

If, however, you have driven a car and know the difference between the "buzzer" and the motor-driven signal - then the car agent has to furnish you a Klaxon before you will take the car.

58 CAR MAKERS believe that this is short-sighted policy. They supply the Klaxon in the first place.

A. E. C.	Davis	Mors (European)	S. & M. "Six"
Alco	F. I. A. T.	Multiplex	Schneider (European)
Armleder	Havers "Six"	National	S. G. V.
Autocar	King	Nyberg	Simplex
H. H. Babcock	Kissel	Oakland	Stafford
Benz	Knickerbocker	Ohio "Six"	Staver
Borland Electric	Knox	Oldsmobile	Stearns
Broc Electric	Lancia (European)	Packard	Sternberg
Buffalo Electric	Locomobile	Peerless	Stevens-Duryea
Roadster	Lozier	Peugeot	Stoddard-Dayton
Century Electric	Marmon	Pierce-Arrow	Touraine
Charon (European)	Matheson	Pope-Hartford	Walker Electric
Chicago Electric	Maxwell "Six"	"Six"	Ward
Columbia	Mercedes	Pratt	White
Croxton	Metallurgique	Rambler	Winton

ON other cars, look carefully at the "electric horn." See if it has a name. Often-times not only has the name-plate been removed but the horn itself has been placed under the hood - out of sight. See if the name means anything to you except what the agent says about it; or if you ever heard of it before. Ask him for a Klaxon - the signal you know about, - and see that he supplies one. He will do it rather than lose the sale of the car.



KLAXONET

Lovell-McConnell Mfg Company Newark, N.J., U.S.A.

KLAXON

"The Public Safety Signal"



KLAXON

This advertisement done in the Klaxon Factory on the Klaxon Press with Klaxon type especially designed by F. W. Goudy.

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Studebaker

THE owner of a Studebaker car is fortunate. He has every mechanical perfection and every luxury in his car and, in addition, Studebaker service.

North, South, East or West, wherever his travels may take him a Studebaker dealer is always nearby, ready to extend loyal Studebaker Service.

Studebaker integrity and the belief of Studebaker in the "square deal" has extended over a period of Fifty years. Fifty years of continuous business life is pretty strong evidence of ample resources and that the public believes in Studebaker and in Studebaker products.

That is one reason why contracts to sell Studebaker cars are so eagerly sought. Another reason is that Studebaker cars are easy to sell and, finally—the interest and co-operation of Studebaker with dealers is a big help not only in making sales, but in keeping the owner satisfied after the sale is made.

THREE CARS

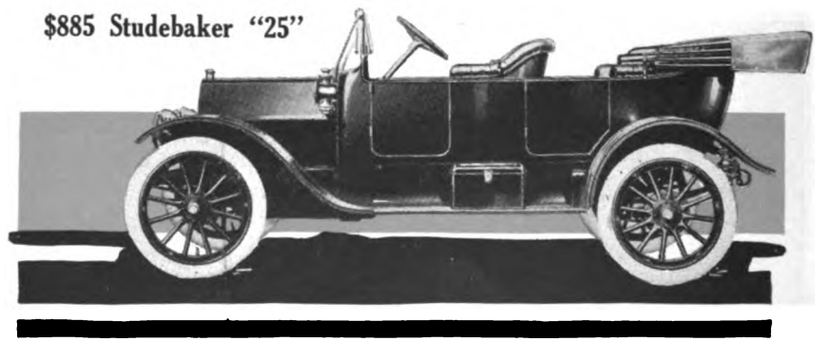
$885 Studebaker "25" **$1290 Studebaker "35"**

$1550 Studebaker "SIX"

Completely Equipped f. o. b. Detroit

STUDEBAKER, - **DETROIT, MICHIGAN**

$885 Studebaker "25"

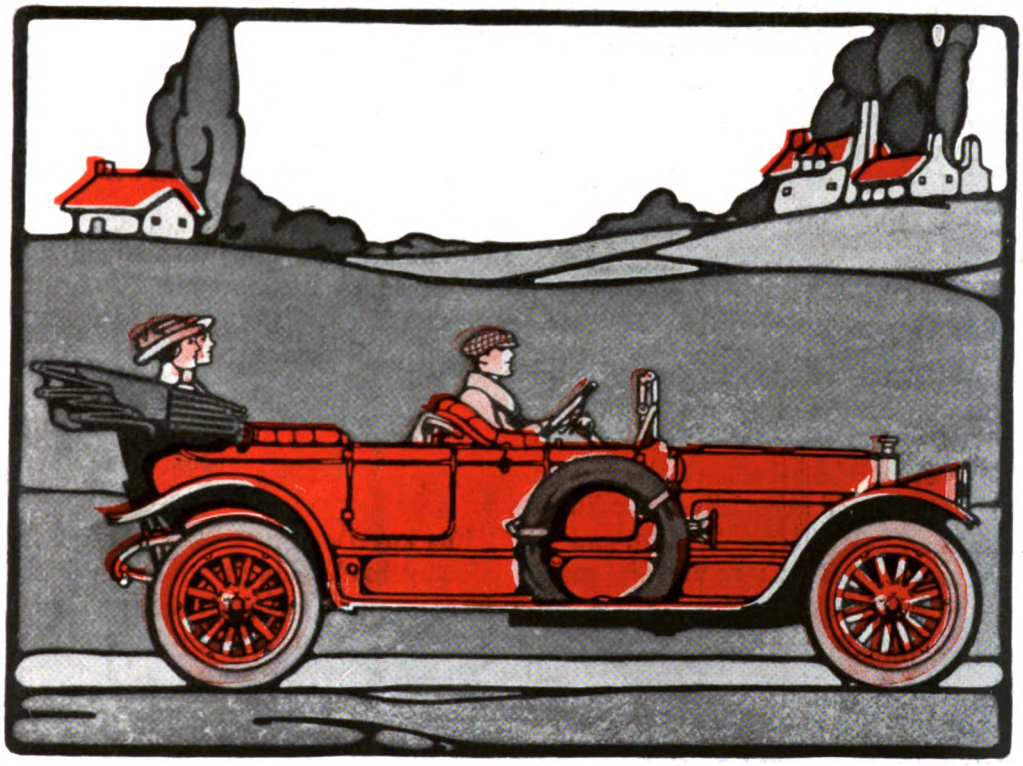


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MOTOR WORLD

ade Paper Giving the World's Motor N

I New York, September 11, 1913 Ten ce
Two do



NO matter what you pay for an Automobile, unless you buy with it a service that lasts as long as the car lasts, you have not made a good investment. In each city where

THE PIERCE-ARROW CARS

are sold there is a complete establishment for rendering those cars every attention they may need.

THE PIERCE-ARROW MOTOR CAR CO., BUFFALO, NEW YORK

d Weekly by the Motor World Publishing Company, 1600 Broadway, Ne

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All the Cars which Started in the Elgin Road Race had Truffault-Hartford Shock Absorbers

Little wonder that we add another victory to our long list of triumphs.

Gil Anderson finishing first, succeeded in smashing all previous records for this race, maintaining an average speed of 71½ miles an hour. Hard on his heels was Ralph Mulford in a Mason. Third place was captured by Spencer Wishart in a Mercer car.

One of the remarkable features of the race was the noticeable absence of tire and spring trouble.

Truffault-Hartfords, apart from the extra ease and comfort they make possible, prevent all ordinary spring trouble and by keeping the wheels of the car on the ground add materially to the life of the tires. Axle crystallization, and its attendant disastrous results, is made much less probable.

Among professional drivers there is a decided preference for this equipment. Even at the sacrifice of other accessories, many drivers have included Truffault-Hartfords, often being obliged to remove certain parts in order to make up for their slight extra weight.

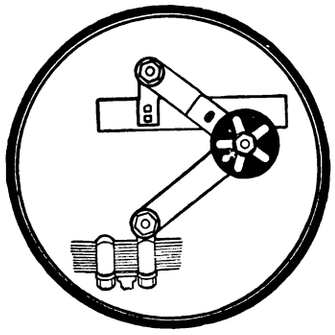
There are few leading car manufacturers today who do not include Truffault-Hartfords as regular equipment. There are now over 200,000 motorists who enjoy the manifold benefit which their use confers.

Manufacturers and owners alike are urged to take proper cognizance of these facts. They point to the universal preference for the

Truffault-Hartford Shock Absorber

"The Pioneer Shock Absorber"

Fits any car and makes any car fit for any road. Unlike other devices, the Truffault-Hartford does not mar the appearance of the car or add materially to its weight. Its efficiency is one hundred per cent. Five models from $15 to $60 per set of four, including the New Automatic type.



Send for Catalogue

Insist Upon Truffault-Hartfords on Your New Car

HARTFORD SUSPENSION COMPANY

EDWARD V. HARTFORD, Pres. **Office and Works: 142 Bay Street, Jersey City, N. J.**

Manufacturers of Hartford Electric Starting and Lighting System

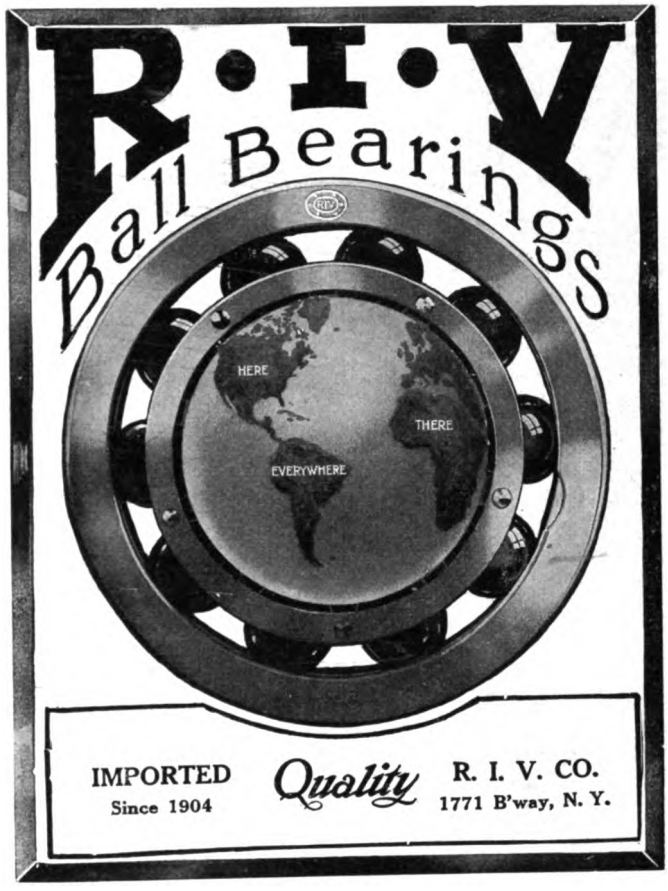
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An examination of a car's bearings will, nine times out of ten, disclose the value of the car. If equipped with the highest grade ball bearings it may be assumed that the manufacturer placed quality above cost when deciding upon the other details of the cars make-up.

R. I. V. Ball Bearings in a car are as a rule a guarantee of the worth of the car. They are found in high-grade automobiles throughout the world.

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Kelly - Springfield

Automobile Tires

True, a Kelly-Springfield Tire by any other name would wear as long. The name simply serves to guide you to the tire.

Kelly-Springfield Tire Company

Corner Broadway and 57th Street, N. Y.

Branch offices in New York, Chicago, Philadelphia, Boston, St. Louis, Detroit, Cincinnati, San Francisco, Los Angeles, Cleveland, Baltimore, Seattle, Atlanta, Akron, O., Buffalo.

The Hearn Tire & Rubber Co., Columbus, O.
Boss Rubber Co., Denver, Colo.
Southern Hdwe. & Woodstock Co., Ltd., New Orleans, La.
Central Rubber & Supply Co., Indianapolis, Ind.
H. R. Olmstead & Son, Syracuse, N. Y.
Bering Tire & Rubber Co., Houston, Texas.
Todd Rubber Co., New Haven, Conn.
Atkinson Tire & Supply Co., Jacksonville, Fla.
C. D. Franke & Co., Charleston, S. C.
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12 Years

Standing between you and our guarantee of quality and performance is an experience and study of 12 long years spent in developing and perfecting a real service giving spark plug.

The result of that period of pioneering

A plug which cleans itself, which burns the carbon as fast as it forms—a plug which doesn't require frequent replacement and which, under ordinary conditions, should last as long as your engine—the C. A. Mezger

"Soot Proof"

Soot Proof Spark Plugs are controlled by basic patents which make successful imitation impossible. Built with a double chamber. Therefore they offer three times the resistance of any other spark plug made.

Millions in use today on the best built cars in America, some of them after 8 years' continuous service.

On a basis of repeat orders alone you should stock Soot Proof Plugs—to say nothing of the satisfied customers you will make by pushing Soot Proof Plugs as your leader.

C. A. MEZGER, Inc.

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New York

Philadelphia, 1427-33 Vine St., Petry-Cassidy, Inc.
Chicago, 1430 Michigan Boulevard, F. E. Sparks.
Detroit, Ford Building, H. E. Butcher.
Portland, 329 Ankeny St., Hughson & Merton.
Seattle, 924 E. Pike St., Hughson & Merton.
San Francisco, 530 Golden Gate Ave., Hughson & Merton.
Los Angeles, 1229 South Olive St., Hughson & Merton.

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Overland 1914

$950

Completely equipped f. o. b. Toledo

With Gray & Davis electric starter and generator—$1075

IN seven days after the announcement of the 1914 Overland, we had immediate shipping orders for 5,000 cars.

This was one-tenth of our 1914 output—50,000 cars.

With a price *lower* than ever and a value *greater* than ever the 1914 Overland is already established as the most sought after car of its type in the entire world.

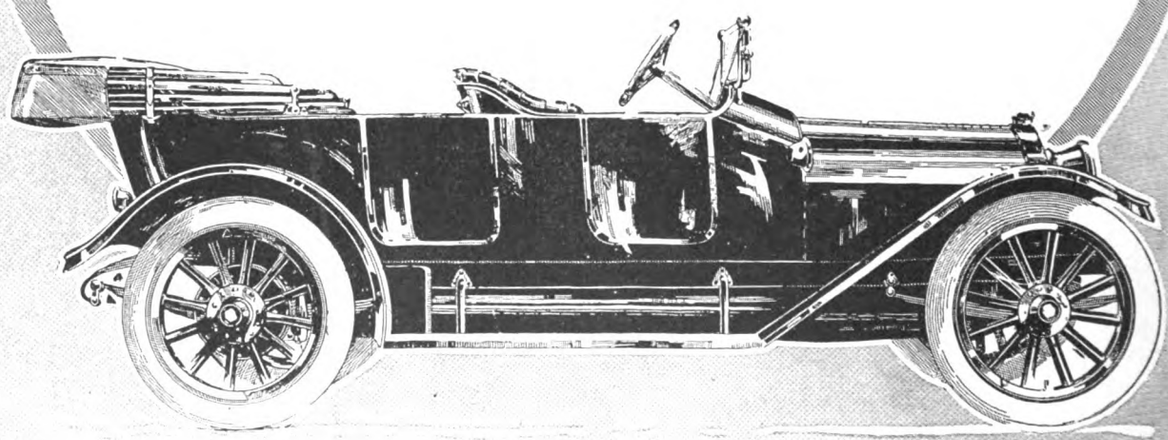
Read the specifications.

35 horsepower
114-inch wheelbase
Electric head, side, dash and tail lights
Timken bearings
33x4 inch Q. D. tires
Cowl dash
Clear-vision windshield
Mohair top, curtains and boot
Stewart speedometer
Electric horn

1914 Catalogue on request
Please address Dept. 50

The Willys-Overland Company

Toledo, Ohio



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MOTOR WORLD

Vol. XXXVI New York, U. S. A., Thursday, September 11, 1913 No. 12

BOSCH SOON TO LAUNCH AN ELECTRIC ENGINE STARTER

Details not Yet Divulged, but it Will be Worthy of the Name—Gould Coupler also Developing a System.

While it may have appeared that a concern of such world-wide prominence in the electrical industry as the Bosch Magneto Co. has been strangely indifferent to the electric starting and lighting system, appearances have been deceitful; for it transpires that for a long period the Bosch people have been engaged in perfecting a system of the sort fit to bear the Bosch trademark and it is known that the Bosch system is now almost ready for exploitation.

Little more than this bare fact has leaked out, but there are reasons for believing that the Bosch device will differ from others of the kind in several substantial respects, particularly in the method of control. Detailed information concerning it probably will be forthcoming within the next month, but it is understood that in all likelihood it will be the first of the year before deliveries will be undertaken.

One other electric lighting and starting system from an even more unexpected source is in process of development, the Gould Coupler Co. having a device of the sort in hand, but as it is not ready to make its appearance on the market no information is obtainable. The relation of railroad car couplers to automobile lighting systems is not so close as to have caused the Gould Coupler Co. to be suspected of having a production of the kind, but the fact that it is closely related to the Gould Storage Battery interests undoubtedly accounts for the experimentation and development work which is now in progress.

Lancia Adopts American Electric Starter.

Despite the apparent apathy or antipathy which exists abroad, not all of the foreign manufacturers have set themselves against electric lighting and starting systems. Evidence to the contrary is contained in the fact that the Rushmore system just has been adopted for use on Lancia cars, chiefly as the result of a visit which Signor Lancia paid to America last fall, at which time he made a tour of the American trade and investigated starting systems very thoroughly. Two other well-known Continental automobile manufacturers and two in England are also authoritatively stated to have adopted the Rushmore system, but for some reason their names have not yet been permitted to become public property.

Only One Bid for Flanders Real Estate.

Only one bid having been received for the real estate of the bankrupt Flanders Mfg. Co., Pontiac, and none whatever for the property in Chelsea, Mich., the receiver, the Detroit Trust Co., considering the offer insufficient, no sale occurred on the dates fixed, Monday and Tuesday last, 8th and 9th inst. Instead the receiver passed up the matter to the court for decision.

The bid for the Pontiac real estate and buildings was tendered by the Harris Bros. Co., who previously purchased the machinery and stock on hand. They offered $65,000 for all of the Pontiac plants, or $25,000 for the gear works and electric plants—prices that are almost ridiculous.

The Chelsea plant, which is a big model industrial establishment, erected by a defaulting treasurer of Michigan, has been a "white elephant" on the hands of all who ever owned it, and the Harris brothers do not want it at any price.

Edge Gets American Shock Absorber.

According to advices credited to J. P. Baldwin, president of the Martin Shock Absorber Co., of Los Angeles, the foreign rights to that device have been conveyed to the well-known S. F. Edge, of London, who about a year since retired from the Napier motor car company. Edge, it is stated, will manufacture the shock absorber for both the British and Continental trade.

CLAIM MOTZ CUSHION TIRE INFRINGES CADWELL PATENT

Men Who Control Rights Bring Suit Against Akron Manufacturer—Revoke License and Sue Swinehart for Royalties.

Although the Swinehart Tire & Rubber Co., of Akron, Ohio, was allied with Edwin B. Cadwell, a Detroit banker, Frank J. Johnston, a Detroit business man, and Frank M. Ashley, a New York lawyer and inventor, in a suit brought some time ago for infringement of patent No. 887,997 in the use of Motz under-cut tires, the three owners of the patent have fallen out with the Swinehart company and are acting alone in a new suit filed this week in the United States District Court for the Southern District of New York against the Motz Tire & Rubber Co., of Akron.

In the first suit, which was against a user of Motz tires, the Swinehart company appeared in the position of a licensee under the patent, but recently the owners of the patent revoked the Swinehart license, are considering extending it to another manufacturer, and meantime have taken steps in an effort to establish that that tire, which is known as a distinctive Motz product and which has been featured by that company, is an infringement of their patent.

Not only has the trio brought suit against the Motz company, but it has instituted an action in the Court of Common Pleas, in Akron, against the Swinehart company for $7,000 royalties alleged to have accumulated during the term of the Swinehart license. The patent was granted May 19, 1908, to Cadwell, who assigned third interests to Ashley and Johnston. Not long after its issuance the owners licensed the Swinehart company on a basis of a minimum royalty of $1,800 a year. The Swinehart company made but few tires and are said to haev paid no royalties.

Meantime the Motz company was devel-

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oping its under-cut tread, the appearance of which has become familiar to the entire trade, and October 8, 1909, the three owners and the Swinehart company instituted an infringement suit in the Federal court in New York City against the Rapid Safety Filter Co., which was using four Motz tires on a delivery vehicle. The Motz company took more or less of an interest in the suit, but the filter company was permitted to "lie down" late last May and judgment was taken against it.

It was supposed that the Motz company had by this action given some recognition to the Cadwell patent, but the contrary proved to be the case, and the present suit has been started to establish the status of the patent. The details of the break with the Swinehart people are not divulged and neither is the name of the company which is negotiating for the new license.

Gerber Must Explain Michigan Debt.

Pittsburgh papers continue to print glowing stories of the "clean cut" purchase and control of the bankrupt Michigan Buggy Co., of Kalamazoo, by the E. F. Gerber Co., the Michigan agents in Pittsburgh, although, as stated in last week's Motor World, the receiver, the Detroit Trust Co., denied the alleged sale, which denial was repeated only yesterday. Gerber, it now appears, did offer $375,000 for the property, but it was not seriously considered, as the Michigan company owes $3,000,000. Letters are being mailed today soliciting bids for the assets, and instead of having acquired them, Gerber has been cited to appear in the Federal court in Pittsburgh tomorrow for examination concerning the $385,000 he owes the Michigan company.

Sweet Retires from Disco Company.

Accustomed to surprises, Detroit automobile circles received one of which no inkling had escaped when it became known yesterday that George P. Sweet, who earned an enviable reputation in building up the business, had disposed of his interests in the Disco Co. and resigned the office of general manager. Sweet is not yet ready to announce his future plans and, in fact, has left Detroit, with Mrs. Sweet, for several weeks of hunting and fishing in Georgian Bay. He will remain there until Oct. 5th.

Biggan to Make Clutches in Buffalo.

The Biggan Engineering Co., of Buffalo, N. Y., which recently was incorporated with an authorized capital of $200,000, will engage in the manufacture of clutches, transmissions and control lever sets at 26-28 Lansing street, which premises have been leased for the purpose. H. F. Biggan is president of the company and O. Seelbach secretary and treasurer.

RECEIVER SAYS SCHACHT IS HOPELESS AND FAVORS SALE

Reorganization Impossible and Continued Operation Merely Adding to Losses—Discloses Faults Contributing to Failure.

If the report of the receiver, filed yesterday, is confirmed by the court, the Schacht Motor Car Co., of Cincinnati, which became financially enmeshed in April last, will soon become but a memory.

The receiver, John F. Deitz, a Cincinnati desk manufacturer, who was also a Schacht director, declares that "there is no possibility of a reorganization or continuance of the business at a profit." He, therefore, recommends that all necessary help be discharged and the property be advertised for sale. At the time of the failure, internal dissensions were said to have precipitated the trouble, but the receiver's report indicates that manufacturing and sales delinquencies were the real roots of the evil.

Asserting that the business "is losing money every day" and that "the longer it continues the worse the situation will become, and with greater loss to the creditors," he says that his investigations have disclosed that, as conducted, there was "little system and no modern inventory or stock account in the manufacturing department;" that "the repair department was being conducted at a loss because customers who bought machines were allowed repairs at less than cost" and that "the sales department was not properly organized and was very expensive."

The receiver is one of those who evidently is greatly impressed by the necessity for season's models, for he states that the Schacht company has no 1914 model to put on the market in order to meet competition, and that present models are growing older and by next year will be so out of style that practically nothing can be realized on them. His report also brings to light that there are some 1912 models still on hand and, it is naively added, that "they are constantly deteriorating."

Likely to Probe Removal of Lansden.

With the return to Newark, N. J., of the property of the bankrupt Lansden Co., which was removed to Allentown, Pa., shortly before the failure, it is stated that an investigation will be made as to the reasons which prompted the dismantling of the Newark plant and its removal to Pennsylvania. Martin E. Kern, manager of the Lansden Co., gave as the reason that it was designed to merge the Lansden and the Webb companies and to obtain new capital in Allentown, but the explanation stated, is not considered sufficient.

According to assertions of the attorney for the Lansden trustee, not only has no attempt been made to set up the machinery, which has been removed to Newark, but approximately $70,000 worth of unfinished Lansden electric truck parts were found stored in the plant of the Mack car Co., in Allentown, in which John D. Mack, who is also heavily interested in both the Lansden and Webb companies, is the chief figure.

Big Men in Chicago Supply Company

The Matador Tire & Vulcanizer Co. [illegible] Michigan avenue, Chicago, has been taken over by a new corporation, styled Consolidated Automobile Supply Co., which is capitalized at $500,000. Bert Walger, general manager of the Matador company, will be vice-president and manager of its successor. All of the other officers of the Matador company—L. G. Smith, president; C. [illegible] Griswold, vice-president, and James A. Findlater, secretary—will also be identified with the Consolidated corporation, among whose directors are Potter Palmer, the Chicago capitalist; William S. Megaris, a Chicago lawyer, and W. S. Sims, a jeweler.

Chalmers's Earnings Show Large Gain.

During the fiscal year ending June 30th last, according to its report which just has been made public, the net earnings of the Chalmers Motor Co., of Detroit, amounted to $1,273,261, an increase of $71,510. Gross earnings were $11,632,951, an increase of $680,564. The 7 per cent. dividend on the $1,500,000 preferred, calling for $105,000 a year, was earned twelve times over. After deducting it the balance, $1,163,261, was equal to 23.3 per cent. on the $5,000,000 outstanding common, which receives 10 per cent. dividends annually.

Klaxon Acts Against Boston Dealer.

Having already filed one suit of the [illegible] and decided to institute similar actions in most of the other large cities, the Lovell-McConnell Mfg. Co., of Newark, N. J., this week filed a suit in the Federal Court in Boston against the Henry Kimball Co., of that city, distributer of Hudson cars. The Boston dealers are accused of infringing the Klaxon patents Nos. 923,048, 923,049 and 923,122, the special infringement complained of constituting the promotion of the sale of Hudson cars equipped with Sparton horns.

Rauch & Lang Branch in Kansas City

The Rauch & Lang Carriage Co., of Cleveland, Ohio, have opened a branch in Kansas City. It is located at 35th and Main streets.

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PACKARD PARES PRICES; ONE MODEL REDUCED $400

Low Price Now $3,750 for "Little Six" Phaeton; High, $5,150 for Imperial Limousine—Nineteen New Body Styles.

Reports which have been afloat for months, to the effect that the Packard Motor Car Co., of Detroit, is making ready to place on the market what might be termed a popular priced model, were, for the moment at least, set at rest this week when the 1914 prices of the "little six" became available.

While reductions, ranging from $50 to $400 have been made, even the lowest priced model—the five-passenger phaeton to which the $400 reduction applies—will be listed at $3,750, which is hardly within the general notion of a popular price. The old and the new prices of the "little six," which is the Packard 38-horsepower model and which is now styled model 238, are as follows:

	Old.	New.
Touring (6-passenger).....	$4,150	$3,850
Touring (7-passenger).....	4,150	3,850
Phaeton (5-passenger)....	4,150	3,750
Runabout	4,050	3,750
Limousine (7-passenger)..	5,200	5,000
Landaulet (7-passenger)..	5,300	5,000
Imperial limousine	5,400	5,150
Brougham (6-passenger)..	5,200	5,000
Coupe	4,500	4,450
Chassis	3,500	3,100

Some of the Packard people explain, however, that owing to their adoption of 19 new body styles, there really is no correct basis for comparison of present and former prices.

Prices of the "big six," the 48-horsepower car, will not be announced until next spring, when the new model will be ready for the market.

All Packard "fours" finally have been discontinued, which, of course, means that hereafter "sixes" only will be produced.

Court Shortens Square Horn's' Defense.

After the Square Motor Horn Co. and the Salvini Electric Horn Mfg. Co. had compiled a list of 175 American and 59 foreign patents as instances of the prior art in defending the suit brought against them in the Federal court in New York City by the Lovell-McConnell Mfg. Co., makers of the Klaxon horn, the court this week, upon motion of the Klaxon counsel, ordered the list shortened; it directed that the Square Horn companies cut the list down to five patents and five instances of prior use, the object being not to encumber the records and proceedings.

The Klaxon company charges infringement of patents Nos. 923,048, 923,049 and 923,122, and also succeeded in having stricken out that part of the defendants' answer seeking to bring in the Hutchison Electric Horn Co. and Miller Reese Hutchison, and also a patent application owned by the defendants and that part setting up as a defense the Klaxon-Newtone suit now pending in the Federal court in Brooklyn.

Proprietor Loses Life in Garage Fire.

Injuries sustained in a fire which followed the explosion of a brazing machine which he was operating in his garage in Newburyport, Mass., on Merrimac avenue, caused the death Tuesday, 9th inst., of Edwin M. Ingalls, who had been connected with the trade for many years. The fire which followed the explosion destroyed the garage, a theater and other buildings and did a total damage of $50,000, $20,000 of which fell upon the garage. Ingalls was fatally burned and died in a hospital.

A charred body found in the ruins is believed to be that of Raymond Carpenter, 21, of Rowley, a garage employe. The clothing and hair of Miss Marion Flanders, the bookkeeper, were set fire by the explosion and she ran to the street, where a city official wrapped his coat about her and extinguished the flames. Assistance was summoned from nearby towns to fight the fire.

Ingalls was 47 years old and is survived by a widow and three children.

No Relief for R. C. H. Corporation.

Creditors who met in Detroit on Tuesday last, in an effort to find a way out for the R. C. H. Corporation, could find none. The receiver suggested a plan whereby material on hand might be converted into 500 cars, but it did not appeal to the creditors, and, accordingly, the plant will be ordered sold. Meanwhile it will remain in partial operation. Some of the larger creditors, it is stated, are endeavoring to raise a fund to bid in the property.

Court Refuses to Confirm Cutting Sale.

As expected, the Federal court has refused to permit the sale of the assets of the Cutting Motor Car Co., of Jackson, Mich., the appraisal of the property having shown it to be worth approximately $268,653. The $30,000 bid was made by W. M. Thompson, of the Jackson City Bank, when the receiver offered the assets for sale last month. In refusing to confirm the sale, the court expressed the opinion that a better price can be and should be obtained.

New Plant for Motor & Manufacturing.

The Motor & Mfg. Co. has let contracts for the erection of a new plant in Dunkirk, N. Y. It will comprise one two-story structure, 57 x 85 feet, and a one-story building, 30 x 84 feet.

3-CENT FUEL IS "FOUND"! "OIL TOPPINGS" ITS NAME

Hitherto Unconsidered Refinery Product Propels Truck 472 Miles for $1.40—Ten Miles per Gallon—"Gas" Would Have Cost $6.74.

Automobile fuel at three cents a gallon is the promise held forth by the California oil refineries as a solution of the problem presented by the high cost of "gas," the promise being contained in what is technically termed "crude oil tops" or "oil toppings." Actually, there is nothing very new in the fuel itself, for it long has been used for firing boilers and furnaces, though not until recently has any attention been paid to it as a possible substitute for gasolene—and even for kerosene and distillate, both of which fuels are high in price as compared with "oil toppings."

The picturesque designation of the fuel comes from the fact that it represents that portion of crude oil refinings which floats at top of the tanks and heretofore has been either drained off and discarded or sold for use in furnaces at less than half the cost of distillate. In specific gravity, "oil toppings" measures approximately 38.5 Baume at 60 degrees Fahrenheit and its cost as compared with the cost of other and well-known fuels is as follows:

	Gravity Baume.	Cost per gal.
Oil toppings	38.5	.03
Kerosene	42.7	.09
Distillate—½ kerosene...	47.6	.08
Distillate	51.4	.07
Gasolene—½ distillate...	55.3	.11
Gasolene	59.7	.14½

These prices obtain in Los Angeles, where the discovery was made that "oil toppings" is suitable for use in automobile motors. The test which demonstrated the suitability of the fuel was made with a Kissel truck, which was driven from Los Angeles to San Francisco, carrying a 2,000-pound load, in the remarkable time of 24 hours 40 minutes, the total distance covered being 472 miles and the average fuel consumption approximately 10 miles to the gallon; altogether, just 46½ gallons of "oil toppings" were used in making the run. The fuel was fed to the engine through a Master carburetter, a comparatively new device designed by H. A. Miller and produced by the Master Carburetter Co., of Los Angeles; according to the foregoing figures the total fuel cost, not including the cost of 3½ gallons of lubricating oil, was less than $1.40—or approximately one-third of a cent to the mile.

At approximately 10 miles to the gallon, sufficient gasolene for the trip would have cost $6.74 at the present price of that com-

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modity in Los Angeles, and at the price of gasolene in the East—approximately 17 cents a gallon—it would have cost $7.90; sufficient distillate, even, to propel the truck the 472 miles between the two ctiies would have cost more than twice as much as the "oil toppings" cost.

Pathfinder Splits California in Two.

Having divided the State of California into two parts, the Motor Car Mfg. Co., of Indianapolis, has turned over its representation in Northern California to the Pathfinder-Pacific Motor Sales Co., of San Francisco, which was organized for the purpose. As heretofore, the Southern part of the State will be controlled by the Pathfinder Motor Car Co., of Los Angeles, which formerly maintained a branch in San Francisco.

The agency in the latter city is backed by James H. Borland, a San Francisco capitalist who acts as president of the new company, and J. R. Pringle, vice-president, who is an attorney of prominence in San Francisco; J. M. Whited is secretary-treasurer and general manager, and Barry Cool is sales manager. It will maintain branches in Sacramento, Oakland, Fresno and Watsonville and later will establish similar branches in Reno, Nev., and in Honolulu. The extent and completeness of its service department, which is under the direction of John D. Stall, will be one of the features of the new company.

Destribats Sails to Revisit France.

Louis P. Destribats, vice-president of the Ajax-Grieb Rubber Co., sailed this week for France, where he will spend six weeks. He is a native of that country, which he has not visited since leaving there as a young man, and is now going chiefly to see his father, whom he has not seen for many years. It will be his first vacation of any kind since he joined the Ajax-Grieb company in 1905.

Empire and Peekskill Garage at Odds.

Demanding $196.53 on goods supplied, the Empire Tire Co., of New York City, filed suit this week in the Supreme Court for New York county against William H. Ash, proprietor of the Peekskill Garage, in Peekskill, N. Y. He is alleged to have contracted the obligation between September 4 and October 26, 1912.

Indian Sues Chittenango Garageman.

The Indian Refining Co. this week filed suit in the Supreme Court for New York county against C. C. Bartholomew, a garageman in Chittenango, N. Y. The oil company asks $97.65 for gas and oil supplied between September 16 and October 29, 1912.

OAKLAND PARES ITS "SIX"; PUTS UP PRICE OF "FOURS"

All Cars to Have Full Equipment, Including Delco Apparatus—New "Little Six" Soon to Be Added to the Line.

Although no very great amount of mechanical alteration has been made by the Oakland Motor Car Co., of Pontiac, Mich., in the newer models which have just made their appearance, the price list has been very materially altered and further to round out the line one new model—a "little six"—has been added. Instead of the option of equipment or no equipment, all the cars now are listed with Delco electric lighting and engine starting apparatus and all the other fitments that go to make up a complete list.

In the case of the six-cylinder model which was added only last year, the price has been reduced from $2,550 (including Delco equipment) to $2,450, though in every other case the price has been raised. The larger of the two "fours," which last year sold for $1,450, now sells for $1,785, the increase in price being due to the fact that it has a much larger motor and is a larger car throughout; and the smaller "four," which heretofore has listed at $1,075, now lists at $1,200. Neither price nor specifications of the new "little six" have as yet been made public.

The larger of the two six-cylinder cars is virtually a reproduction of its predecessor, except, of course, that details have been refined and corners smoothed off, so to speak, and the equipment list filled out; motor and transmission elements remain the same. The motor measures 4⅛ x 4¾ and is rated at 60 horsepower. Similarly, the smaller of the two "fours" scarcely has been changed at all and retains its 3½ x 5-inch motor. In both of these cars, and also in the larger "four," cone clutches and three-speed selectively operated gearsets are used; the steering column remains at the right side.

It is in the larger "four" of the two that the greatest mechanical change has been made, though the change is confined almost wholly to the motor. Instead of measuring 4⅛ x 4¾—the dimensions of the "six"—this model now has a 4¼ x 5¼ motor the rating of which is 29 horsepower, as against 27 horsepower for the old dimensions; obviously, however, both figures are considerably lower than the actual power developed, the discrepancy being greater in the case of the new motor because of the greater difference in stroke-bore ratio. In other respects the car has been slightly enlarged and now has a roomier tonneau and u[illegible] three of the cars the various switches, meters, etc., have been more advantageously placed on the cowlboard and a running board tool box added.

Senate Passes the Underwood Tariff.

By a vote of 44 to 37, the Senate on Tuesday last, 9th inst., passed the Underwood tariff bill without further amendment of the automobile rates. As provided by the upper house, they are as follows:

Finished automobiles valued at $1,50[illegible] over, 45 per cent.; valued at less than $1,500 and more than $1,000, 30 per cent.; valued at less than $1,000, 15 per cent.; automobile chassis and finished parts of automobiles, not including tires, 30 per cent.

These rates, as is well known, represent substantial amendments of the duties as provided by the House, and although the bill will now be considered by a conference committee representing both chambers before it again comes before the House, there is small doubt that the Senate rates will be adopted and enacted into law.

Edwards Sues A. C. A. for $9,000 Salary.

William A. Edwards, former secretary of the Automobile Club of America, filed suit this week in the Supreme Court for New York county against the club for $9,000 which he claims is owed him for services between February 18, 1912, and August 18, 1913. He states that his predecessor received a salary of $6,000 a year, that both he and the club contemplated the payment to him of a reasonably large salary, that he has not received it, although he has demanded it, and that his request is fair and reasonable.

Zenith Carburetter Chief Coming Over.

Antonin Boulade, vice-president of the Zenith Carburetter Co., of Detroit, and the moving spirit in the three foreign plants, is en route to this country to superintend the removal of the Detroit plant to its new location on Vanda avenue in that city. Incidentally, Boulade just has received the Legion of Honor decoration from the French government for distinguished services in military aeronautics and ballooning, photography, as well as in the science of carburation.

Brazilian Plant for British Dunlop.

Apparently the Goodyear Tire & Rubber Co. will not have the only tire factory in Brazil, for the British Dunlop interests have organized the Dunlop Pneumatic Tire Co. of South American, Ltd., which, like the Goodyear people, will erect and operate a plant in Rio de Janeiro. The Dunlop enterprise is capitalized at $25,000 in £1 shares. The Goodyear is capitalized at $3,000,000.

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The Week's Incorporations

Detroit, Mich.—Oleson-Adams Mfg. Co., under Michigan laws; authorized capital, $10,000; to manufacture motor cars.

Detroit, Mich.—Princess Cyclecar Co., under Michigan laws; authorized capital, $200,000; to manufacture motor cars, hydroplanes, etc.

Hondo, Tex—Hondo Auto Sales Co., under Texas laws; authorized capital, $2,000. Corporators—Claude W. Gilliam, Chas. W. Robers and others.

Milwaukee, Wis.—McDonald Motor Car Co., under Wisconsin laws; authorized capital, $10,000. Corporators—Carl G. Pauli, John McDonald, Jr., Ida Pauli.

Portland, Me.—F. O. Bailey Carriage Co., under Maine laws; authorized capital, $50,000; to manufacture and deal in vehicles of every description, supplies, etc.

Yoakum, Tex.—Universal Motor Car & Supply Co., under Texas laws; authorized capital, $3,000. Corporators—Otto Wagoner, F. F. Klohs, H. Sockamp.

Atlantic City, N. J.—Parkway Co., under New Jersey laws; authorized capital, $100,000. Corporators—W. Lewis, R. L. Beyer, J. H. Hayes, Jr., all of Atlantic City.

Trenton, N. J.—The Motor Shop, under New Jersey laws; authorized capital, $25,000. Corporators—R. C. Manning, J. L. Bodine, W. L. Cox, Jr., all of Trenton.

Bowling Green, Ohio—Bowling Green Rubber Co., under Ohio laws; authorized capital, $25.000. Corporators—Charles W. Greene, M. L. Cope, Cecilia P. Cope.

Detroit, Mich.—Detroit Ball Bearing Co., under Michigan laws; authorized capital, $2,000; to operate a motor car repair-shop. Corporators—Joseph Pauer, James Corney.

Ayer, Mass.—E. O. Proctor Co., under Massachusetts laws; authorized capital, $50,000; to deal in motor cars and operate a garage. Corporators—E. O. Proctor and others.

Detroit, Mich.—Metal Parts Engineering Co., under Michigan laws; authorized capital, $25,000; to manufacture motor car parts. Corporators—W. L. Kenfield, W. W. McIntyre and others.

Detroit, Mich.—Cameron Wire Wheel Co., under Michigan laws; authorized capital, $25,000; to manufacture wire automobile wheels. Corporators—A. A. Leslie, F. F. Cameron and others.

Los Angeles, Cal.—Vic-Mac Garage Co., under California laws; authorized capital, $50,000. Corporators—Victor A. Machris, Alfred P. Machris, George L. Machris, A. M. Marlian, S. Stephens.

Chicago, Ill.—Petschel Storage Battery Co., under Illinois laws; authorized capital, $75,000; to manufacture electrical supplies. Corporators—H. T. Scarrett, N. E. Cole, R. T. Jefferson, all of Chicago.

Chicago, Ill.—Fred S. Decola Co., under Illinois laws; authorized capital, $2,500; to maintain and operate a garage and motor livery. Corporators—Canian Grisco, John A. Navigato, James R. Navigato.

Walkerville, Ont.—Fisher Motor Co., under Canadian laws; authorized capital, $150,000; to manufacture motor cars, machinery, etc. Corporators—C. F. Gerraghty, F. E. Fisher, F. W. Vollans and others.

Utica, N. Y.—Wahl Auto Sales Co., under New York laws; authorized capital, $2,000. Corporators—M. F. Robinschon, 237 Rutgers street; E. E. Robinschon, 16 Bristol street; J. J. Lanz, 5 George place.

Waterbury, Conn.—East Side Garage, under Connecticut laws; authorized capital, $5.000; to conduct a garage. Corporators—Lois S. Phippeney, Robert V. Cooper, Jennie V. Cooper, William R. Price.

Cincinnati, Ohio—Eureka Automobile Co., under Ohio laws; authorized capital, $10,000; to deal in motor cars. Corporators—G. W. Ammerman, J. M. DeCamp, R. M. Ochiltree, E. C. Stang, Joseph Carney.

New York, N. Y.—Sireno Co., under New York laws; authorized capital, $5,000; to manufacture automobile horns. Corporators—George H. Tamlyn, Charles F. Pearce and Walter H. Pearce, all of 18 Rose street.

Richmond, Va.—Auto Cover & Supply Co., under Virginia laws; authorized capital, $15,000; to manufacture, buy and sell motor car accessories. Corporators—A. W. Evans, A. Blackburn, H. B. Williamson.

New York, N. Y.—Francis Motor Renting Co., under New York laws; authorized capital, $10,000. Corporators—Robert H. Elder, 115 Broadway; Helen B. Inch and Francis B. Inch, both of 1531 Broadway.

Eau Claire, Wis.—Darwin Motor Car Co., under Wisconsin laws; authorized capital, $10,000. Corporators—O L. Darwin, Eau Claire; W. C. Tuffts, Withee; Gunder Anderson, Owen; M. D. Garrison, Thorp.

New York, N. Y.—Oleo Shock Absorber Co., under New York laws; authorized capital, $30,000. Corporators—John F. Booth, 271 Broadway; August Estelmann and Harry A. Bell, both of 500 West 56th street.

Chicago, Ill.—Mogul Starter Co., under Illinois laws; authorized capital, $75,000; to manufacture automobile accessories. Corporators—S. G. Harrison, M. Beringer, P. T. Morris, C. W. Paltzer, all of Chicago.

Brooklyn, N. Y.—Bushwick Automobile Co., under New York laws; authorized capital, $2,000. Corporators—David Werchen, 994 Myrtle avenue; Isaac Rosenberg and Sophie Rosenberg, both of 80 Beaver street.

Brooklyn, N. Y.—United States Garages, under New York laws; authorized capital, $500. Corporators—Henry D. Bristol, Rockville Center; John H. Herman, Jr., 194 Woodbine street; Rose Simon, 934 Madison street.

Indianapolis, Ind.—Herff-Brooks Corporation, under Indiana laws; authorized capital, $100,000; to conduct a general motor vehicle business. Corporators—Jacob Herbert and George Herff, H. H. Brooks, R. Samuels.

East Cleveland, Ohio—Euclid-Superior Auto & Supply Co., under Ohio laws; authorized capital, $10,000; to deal in motor cars. Corporators—C. R. Williamson, E. M. Ball, W. R. Winn, P. A. Knoedler, D. J. Lombard.

Brooklyn, N. Y.—Williams Auto Service Co., under New York laws; authorized capital, $2,500. Corporators—Lawrence G. Saglona, 9 East 10th street; Annie S. Williams and Albert E. Williams, both of 126 Sterling place.

Toledo, Ohio—Griffin Taxicab Co., under Ohio laws; authorized capital, $10,000; to conduct a general taxicab business. Corporators—Sherman B. Goss, C. C. Sampson, Chas. W. Thompson, John H. O'Leary, Geo. N. Goss.

Wilmington, Ohio—Wilmington Auto Co., under Ohio laws; authorized capital, $10,000. Corporators—Carl Bangham, Frank L. Gallup, W. H. Hoskins, N. J. Lewis, Harry McKay, E. T. McPherson, O. L. Pidgeon.

Brooklyn, N. Y.—Killmer Co., under New York laws; authorized capital, $10,000; to

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manufacture Gilson primer and gasolene saver. Corporators—Nelson B. Killmer, Ralph H. Killmer and Mary A. Killmer, all of 396 State street.

Buffalo, N. Y.—Clifford Co., under New York laws; authorized capital, $15,000; to manufacture equipment for motor cars, boats, etc. Corporators—William M. Sellec, Rochester; Clarence C. Clifford and Welford Golden, both of Buffalo.

Troy, N. Y.—Scott D. Nichols, Inc., under New York laws; authorized capital, $10,000; to engage in a general motor vehicle business. Corporators—Scott D. Nichols, Marion Nichols and Anna MacNeil, all of Hoosic and Burdett avenues.

Bronx, N. Y.—Arrowsmith Mfg. Co., under New York laws; authorized capital, $10,000; to manufacture automobile accessories. Corporators—Frederick Kalmbach, 1068 Hall place; Albert Kalmbach, 784 Elton avenue; John M. Flick, 991 Freeman street.

Lynbrook, N. Y.—Metropol Motors Corporation, under New York laws; authorized capital, $50,000. Corporators—Robert D. McKay, 407 West 18th street, New York; J. Frank Wiggin, 11½ West 65th street, New York; F. W. Preuss, 1926 Broadway, New York.

Richmond, N. Y.—Commercial Auto Body Co., under New York laws; authorized capital, $12,000. Corporators—William Hertz, 139 Park Hill avenue, Yonkers; Caspar A. Scheiper, 396 Bay street, Staten Island; Arthur W. Owen, 208 West 69th street, New York.

Brooklyn, N. Y.—Flatbush Avenue Taxicab Co., Inc., under New York laws; authorized capital, $5,000; to operate a taxicab service. Corporators—Charles Stork, 336 Flatbush avenue; John Wilmartin, 369 Flatbush avenue; William H. Fangemann 320 Union street, all of Brooklyn.

Onawa, Iowa—Monona County Auto Co., under Iowa laws; authorized capital, $20,000; to operate a garage and deal in motor cars. Corporators—W. J. Benson, H. L. Craven, E. P. Myrland, of Onawa; James McIntyre, of Blencoe; Ira Brown, of Whiting; John W. Anderson, Max Grant, C. E. Underhill.

Sioux City, Iowa—Self-Compressing Indestructible Auto Tire Co., under Iowa laws; authorized capital, $100,000; to manufacture and sell a non-pneumatic tire. Corporators—A. Fahlenkamp, Carl Meyer, Ben Short, J. B. Barnes, W. H. Farnsworth, and J. W. Kennedy, all of Sioux City, and A. J. Schnoor and Peter N. Arp, of Holstein.

Changes in Capitalization.

Detroit, Mich.—Grant Motor Car Co., from $165,000 to $200,000.

PROMINENT MEN IN TRADE WHO ASSUME NEW DUTIES

Resignations and Promotions That Serve to Place Many Workers in New Places—Few Leave the Industry.

A. S. Robinson, former sales manager of the Kissel Kar branch in Los Angeles, has been promoted to the post of manager. He succeeds to the vacancy created by the death of E. Rogers Stearns.

Following in the footsteps of G. M. Berry, treasurer, E. S. Maddock, assistant secretary of the Thos. B. Jeffery Co., of Kenosha, has resigned that office. Maddock has been with the Jeffery company since 1908.

C. F. Bockus, superintendent of Studebaker plant No. 4 since its establishment, has been promoted to a special position created for him and which will have to do with the specialization of manufacturing methods.

C. M. Logan has been appointed Eastern traveling representative of the Lozier Motor Co., of Detroit; he will make his headquarters in Cleveland. Previously he was connected with the Studebaker Corporation.

Arthur A. O'Neil has been appointed Eastern sales manager of the Empire Automobile Co., of Indianapolis, and will make his headquarters in Boston. He acquired the necessary experience with the Studebaker and Jeffery companies.

L. L. King has been appointed advertising manager of the Goodyear Tire & Rubber Co., of Akron, and will take over most of the duties previously performed by H. S. Quine; the latter will hereafter act more as a direct assistant of President Seiberling.

Otis Funderburk has been appointed sales manager of the carburetter division of the Detroit Lubricator Co., which recently took up the manufacture of the Stewart carburetter. Previously Funderburk was Michigan manager of the Rayfield carburetter interests.

Fred W. Nichols, assistant sales manager of the Chalmers Motor Co., of Detroit, has been transferred to Boston, where he will serve as district manager of the New England territory. He has been succeeded by L. E. Blocker, who has been with the Chalmers company since its formation.

Richard E. Baus, who at one time was manager of Studebaker Plant No. 3 but who more recently has been acting as manager of the Maxwell branch in Dayton, Ohio, has returned to the Studebaker Corporation, where he again will be attached to the production department under Mr. Wollering. Baus will apply himself to specialization of cost methods, stock keeping and other details.

D. B. Williams, former advertising manager of the American Motors Co., of Indianapolis, who three months ago relinquished that position to become a district sales manager for the company, has returned to the advertising department now with enlarged duties. He just has been appointed advertising manager of both the American Motors and Marion Motor Car companies, both of which are J. I. Handler properties.

W. McK. White has been appointed sales manager of the Esterline Co., of Indianapolis, which means that hereafter he will have to do with lamps, electric lighting outfits and other electrical appliances instead of motor cars, with which he had been so long identified. White had experience with several of the best known automobile companies, his most recent connection having been with the Marion Motor Car Co. of Indianapolis.

R. H. Kately, former sales manager of the R. C. H. Corporation, of Detroit, and Alwyn Gloetzner, former factory manager of the Krit Motor Car Co., of the same city, who at one time was identified with the Olds interests, have been added to the staff of the Thomas Howard Co., of Brooklyn, which markets the output of Correja cars and which is preparing to turn out in Detroit a light $495 car which will bear the name Howard. Kately will be business manager of the Howard company and Gloetzner designer and factory manager.

As one of the first moves in the semi-reorganization of its headquarters staff, the Moline Automobile Co., of East Moline, Ill., has appointed L. M. Bradley advertising manager and assistant sales manager. Bradley is well known, both in the East and in the West. At one time he was assistant general manager of the American Motor Car Manufacturers' Association, the anti-Selden organization, and later became advertising manager of the United States Motor Co., relinquishing that office to go first with the Studebaker Corporation and later with the Willys-Overland interests, of whose respective publicity departments he had charge.

Crockett Here from Asia for Short Stay.

James B. Crockett, of Detroit, who has charge of the Studebaker business in Asia where he has been located for two years, arrived in this country last week. He will spend a month at the Studebaker factory in Detroit before returning to his duties in the Far East.

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In the RETAIL WORLD

John Stumpf, of Templeton, Cal., has completed a garage.

C. P. Lutz and E. F. Allen are about to open a garage in Lenoir, N. C.

Plans have been secured by F. N. Rothenbush, of Stockton, Cal., for a garage; it will cost $3,500.

D. J. Carson, of Dubois, Pa., is building a garage; it is located on West Washington avenue.

Lew Bierley, of Chillicothe, Ohio, has opened a garage; it is located at 34 East Main street.

Roiff & Leinbacn are about to erect a new garage in Reading, Pa. The site is on Madison avenue.

The Reading-Brownlee Co., of Allentown, Pa., has awarded the contract for a one-story garage.

Kientop & Hubbell, of Alliance, Neb., have secured permission to build a garage, 40 x 150 feet.

Henry R. Nelson plans to erect a garage in San Diego, Cal. He has secured a site on Ivy street.

Fred Hendrick, of Reading, Pa., plans to build a garage, 40 x 50 feet; the site is on Schuylkill avenue.

Fred Cramm, of Hutchinson, Kan., has secured permission to erect a new garage; he is a Buick dealer.

A. J. Reynolds has opened salesrooms in Tampa, Fla., at 100 Lafayette street; he will handle Cleveland trucks.

William and Isaac Smith, of Trenton, N. J., plan to erect a garage on West Hanover street; it will cost $4,000.

Hewitt & Son, of Hillsdale, Mich., have sold their garage to George Frost, of Montgomery, in the same State.

T. J. Evans and J. L. Harris plan to build a garage in San Pedro, Cal. They have secured a site on 12th street.

Christ Ricker has sold the Ritzville (Wash.) Garage to Hanna & Moore; Ricker will maintain his car agency.

Charles M. Hammond, of Middleport, N. Y., has been granted authority to erect a garage; the site is on Vernon street.

H. W. Gable has entered the trade in Belvidere, Ill. He has secured the Hudson agency and has located on Elm street.

Bender & Moore, of Tulare, Cal., have let the contracts for a garage to be erected on K street; the estimated cost is $40,000.

The Overland Automobile Co., Overland distributer in Houston, Tex., has taken possession of new quarters at 908 Main street.

The Northwest Motor Co. has entered the trade in Washington, D. C. It will deal in supplies and accessories at 1709 14th street.

J. S. Coleman, of 326 West 70th street, New York City, is to erect a garage; it will stand at 122 West 56th street and will cost $9,000.

A. J. Starn and J. B. Symes, of Sparta, Mich., are about to open a garage; they have purchased a site on North Union street.

J. E. Fisher has purchased a half-interest in the W. H. Millican Garage in Luling, Tex. Additional garage equipment will be installed.

Kratz & Kratz, operators of a garage, livery and supply business in Detroit, have branched out; they have taken the Speedwell agency.

P. F. Compton, of McFarland, Cal., has sold a half interest in his garage business to J. F. Bocco, formerly of Baldwin, in the same State.

The Germantown (Pa.) Garage & Storage Co. is preparing plans for a one-story brick garage; the cost will be approximately $30,00.

R. W. Mayer, of Frostburg, Md., has been granted authority to build a garage on Water street; he is now locatetd at 38 East Main street.

The Dreadnaught Motor Co., of Oakland, Cal., is erecting a new garage and salesrooms at 2543 Broadway; the company stocks Moline cars.

Jonas Brower plans to erect a garage, 40 x 100 feet, in Flora, Ind., on South Center street; he will commence construction about September 15.

The Miller Bros. Automobile & Supply Co., of Washington, D. C., has taken possession of new quarters; they are located at 1st and Pierce streets.

Edward Faust purposes opening a garage in Portland, Ind. Formerly he was connected with the Buick Garage Co. in Bluffton, in the same State.

C. E. Evans & Sons, of Sawtelle, Cal., are erecting a new garage and machine-shop on 3rd street; they are now located at 4th and Colorado streets.

The Palouse (Wash.) Garage has been sold by Cruver & McDonald to H. F. and F. J. McDonald; it was established two years ago by A. E. Cruver.

James Chipman, of Chipman & Fisk, garage operators in Constantine, Mich., has withdrawn from the firm; A. F. Fisk will continue the business alone.

Henry Mitchell, of 1932 Watts street, Philadelphia, Pa., has been granted authority to erect a garage at 1933 North Broad street; its cost will be $9,000.

C. A. Fay, of Clinton, Iowa, has become a dealer; he has secured the Kissel agency for Clinton county, Iowa, and Whiteside, Carroll and Jo Daviess counties, Ill.

The Auto Body & Repair Co. has been formed in Houston, Tex., and will locate at 309 Smith street; the company will build and repair automobile tops and bodies.

The Green Taxi & Auto Co., of Houston, Tex., has secured plans for a new three-story garage; the site in on Upper Main street. The company is now located at 1407 Main street.

M. Gerhart, of Des Moines, Iowa, has purchased from C. E. Erbe the business and garage of the Independent Auto Co. The company has the Locomobile and Moline agencies.

A. E. Avery, of Clarkston, Wash., has purchased the interest of his partner, Geo. Bittle, in their garage business; it is styled the Clarkson Garage and will be operated by Avery alone.

W. J. Kiley, of Pontiac, Ill., has purchased the Cullom Garage of Cook & Chandler; E. Cook has removed to Chicago, but D. Chandler has not yet decided on his future plans.

The Herkimer Garage Co. has been formed and will take over the Clark Garage in Herkimer, N. Y., on South Washington street; new equipment and a stock of accessories will be added.

The Universal Motor Car & Supply Co. has been formed in Yoakum, Tex., to operate a garage; the stockholders are: Otto

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Wagoner, L. T. Burns, H. Seekamp, Ross W. Irwin and F. S. Klohs.

August A. Belgard and Eber D. Jackson, of Los Angeles, have awarded the contract for a one-story garage to be erected on Grand avenue, between 1st and Court streets; the estimated cost is $10,167.50.

William J. Schuh has sold the Iowa Auto & Garage Co., of 655 Iowa street, Dubuque, Iowa, to the Iowa Vulcanizing Co. Schuh will manage a service garage at Minneapolis during the Minnesota State Fair this month.

The American Automobile Exchange has been organized in Indianapolis and has located at 429 North Meridian street; it deals in new and used cars. W. W. Thomas is president and A. A. Lease secretary and treasurer.

The Rader & Bates Automobile Co. has opened a garage and salesrooms at Waterloo, Iowa, at East 9th and Sycamore streets; Buick cars will be stocked. Bates formerly was a territorial representative for the Buick Motor Co.

The Auto Repair & Guarantee Service Co., of New Haven, Conn., has changed its name to Central Garage Co. and has removed to 212 State street; the company, which handles Chase trucks, formerly was located at York and Grove streets.

Lewis Raapke and his son, William, have opened a garage and salesrooms in Council Bluffs, Iowa, at 8th street and Broadway, under the style Raapke Motor Car Co. They have the Cartercar agency. The Raapkes formerly were in the wholesale grocery business in Omaha.

Thomas McCurnin, of Des Moines, Iowa, will build a two-story brick and steel garage, 66 x 132 feet, at 1106-10 Locust street; it will represent an expenditure of $14,000.

The Morse-Abrahamson Co., of Minneapolis, Minn., has opened headquarters at 1408 Hennepin avenue; the company deals in used cars.

E. D. Loomis has entered business in Jackson, Mich., under the style Loomis Transfer Co. He has located in two Ruby steel garages, 66 x 25 and 10 x 14 feet, at Main and Perrine street, and has four taxicabs, two touring cars and a truck. His drivers are uniformed. He also will store cars and sell supplies and acccessories.

The Hunter Automobile Co., which has maintained a garage and sales business in Waterloo, Iowa, has discontinued the garage and will devote itself to the sale of Ford and Cadillac cars; the Blaine Auto Co., which operates a garage in Redfield, in the same State, will occupy the former Hunter location in the Harper building. The Blaine company is State agent for Chalmers and Overland cars.

LINCOLN WAY ENDORSED BY CHAMBER OF COMMERCE

Will Support Project and Render Assistance — Directors Plan Campaign of Education Regarding Truck Tire Maintenance.

After a "recess" of two months, the board of directors of the Automobile Chamber of Commerce resumed their monthly meetings in New York on the 3rd inst, and although a considerable volume of work had accumulated, most of it was of the usual routine nature.

Practically the only subject of general moment which was considered was the Lincoln Highway project, which by resolution was formally endorsed and the Chamber committed to "render such assistance from time to time as may be proper and feasible."

The directors also adopted as their own views the declaration of road principles recommended by the good roads committee, the principles being of the sort designed to evolve permanent highways and means of caring for them.

As the special committee which is considering the revision of the car and truck guarantees with a view of combining them in a single warranty, is not yet ready to report, the directors approved the recommendation of their commercial vehicle committee urging the re-adoption of the motor truck standards adopted last year by the defunct National Association of Automobile Manufacturers, and which has to do with speed ratings, body weight allowances, frame widths, overloading and overspeeding and demonstration charges.

As it has been discovered that truck users in England are obtaining two or three times the mileage from solid tires that is usual in this country, the Automobile Chamber of Commerce practically committed itself to a campaign of education, tires, next to drivers' wages, being the largest single item in the cost of operating gas trucks in America. The education will take the form of the publication and distribution of a pamphlet dealing with the subject and instructive articles in the daily and periodical press as to the causes of solid tire destruction.

Milwaukee Partners Go Separate Ways.

Orrin Hughes and John McDonald, Jr., who constituted the Hughes-McDonald Motor Car Co., 239-241 Wisconsin street, Milwaukee, one of the largest selling agencies in that State, have dissolved partnership and each is going into the same business on his separate account. McDonald, with Carl G. Pauli, had organized the McDonald Motor Car Co., and will continue to occupy the old company's premises, handling the Lozier, the Ohio electric and the Koehler truck. Hughes, in his own name, has located at 170 Ogden avenue, where he will handle the Apperson for the State of Wisconsin. The Garford, formerly one of the Hughes-McDonald lines, has been taken over by the Maxwell Auto Sales Co., organized by J. J. Koehler, Lee Lippow and August Hahn.

Recent Losses by Fire.

Sheldon, Ia.—Eindeg & Engle, garage destroyed. Loss not stated.

Odebolt, Ia.—Einspahr & Co., garage destroyed. Loss not stated.

Newburyport, Mass.—Edwin M. Ingalls; garage destroyed. Loss not stated.

Kansas City, Mo.—Charles H. Bronston, 1020 Olive street; garage destroyed. Loss not stated.

Hempstead, N. Y.—Willis Young, Fulton and Cathedral avenues; garage destroyed. Loss not stated.

Pueblo, Col.—Congress Garage, 7th street and Santa Fe avenue; garage and seven cars destroyed. Loss not stated.

Pittsburgh, Pa.—Schenley Auto Accessory Co., 302-6 Craig street; building and stock damaged. Loss, $2,500.

New York, N. Y.—John Wanamaker, 152 East 31st street; garage damaged by explosion and fire. Loss, $10,000.

Minor Business Troubles.

Richard D. Daniels and Rudolph H. Behrend have been appointed receivers for the C. B. B. Motor Car Co., of Washington, D. C.; they were required to furnish a joint bond of $3,000.

By order of the court, the stock of the Auto Owners' Supply Co., in Hartford, Conn., is being disposed of this week at public sale. The company went into the hands of a receiver several weeks ago.

A petition in bankruptcy has been filed against Edward Bean, who formerly conducted a garage on Columbus avenue, in New Haven, Conn.; his debts are placed at 3,000. Bean, it is stated, left the garage in an automobile, Sunday, August 21, and has not been seen since.

Receiver for Failure to Pay Judgment.

Because Leland A. Mitchell, of the Mitchell-Edmonson Garage Co., of 23 West 62d street, New York City, failed to pay a judgment secured against him in the Municipal Court of New York City by the Warner Instrument Co. he was examined this week in supplementary proceedings in City Court and a receiver appointed for him; the amount of the judgment is $74.41. He stated that he received $40 a week for his connection with the garage.

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A. B. SWETLAND, President and General Manager
F. V. CLARK, Business Manager.

EDITORIAL DEPARTMENT
R. G. BETTS, Managing Editor
S. P. McMINN HOWARD GREENE
R. W. SHERMAN

ADVERTISING DEPARTMENT
BROCK MATHEWSON, Manager
New York Office
1600 Broadway
HOWARD L. SPOHN LOUIS R. SMITH O. H. ADAMS

Western Office
1001 Ford Bldg., Detroit, Mich.
W. H. TRIPP, Mgr.

Detroit
1001 Ford Bldg.
MAXTON R. DAVIES

Cleveland
610 Superior Ave. East
C. H. HANDERSON

Chicago
Room 510 Harvester Building
606 South Michigan Avenue
H. A. WILLIAMS

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ROAD TESTS FOR FINISHED CARS.

It would be interesting to discover how many manufacturers subject more than their chassis to road tests; in other words, to learn how many finished cars are actually "put through the mill" of actual usage before they are placed on the market. Whatever may be the case, it is certain that not a few manufacturers might profit exceedingly did they seek to discover first hand just how their cars are affected when bodies or tops, or both, are applied to them.

As a rule, testers are concerned chiefly with the proper operation of engines and other moving parts. What the finished car "feels like" is almost a foreign experience to them, and yet the bodily comfort of purchasers is so greatly affected for better or worse not merely by the design of the body but by the "feel" of it, the wonder is that road tests of finished cars are not more general.

Tops, and closed bodies particularly, so greatly accentuate every noise set up by the engine or other moving parts that, if for no other reason, the effort to eliminate such noises would make the effort worth while. It is a fact easily susceptible of proof that many highly strung or otherwise nervous women are affected by the drumming and other peculiar noises set up by at least some limousine bodies. The proper ventilation of such bodies is also a factor which is too greatly overlooked, and one on which no factory tester of his own accord ever will be able to render a report. Yet the "stuffiness" of closed cars probably is the cause of the most general complaint leveled at them, as manufacturers must be well aware.

The tester of a finished car, however, would have no trouble in detecting what Motor World several years ago described as "torture chambers"—that is, the front compartments of even touring cars which, because of the heat of the engine or pipes, particularly in hot weather, are rendered almost unendurable because of an absence of ventilation.

Since Motor World applied that term to them ventilators of some kind have been applied to most cars, but there are some of them which are still lacking in this respect and others in which the ventilation is still inadequate. At even the normal summer temperatures the floor boards of some of these cars become so hot that, as one owner-driver recently described it, his feet seemed to be swollen to twice their natural size.

Rattling doors and rattling tool boxes, or tools, to say nothing of other rattles, probably also would be detected if finished cars, equipped for touring use, were subjected to extended road tests.

How certain items of equipment are affected by lack of such testing is indicated in the case of one of the best-known cars, to which the rear tire rack is affixed; the top rests on the tires, not only permitting friction that wears holes in the top cover, but also requiring that the top be partly raised before a tire can be removed, an awkward performance at best.

Undoubtedly many other of those things which come under the head of refinement of details, and which would prove real refinements, would be rendered possible at practically no cost, were the practice of testing finished cars the rule rather than the exception.

PRINTED MATTER THAT LACKS POINT.

Judged by their printed matter, not a few manufacturers of new accessories assume that an illustration and a few superlatives are sufficient to tell the story of their respective wares. They seem possessed of the notion that descriptive matter is unnecessary; at any rate, the number of circulars exploiting accessories which convey no information regarding either make-up or method of operation is not short of astounding. It may be due to this fact that much printed matter of the sort utterly fails to produce results and otherwise goes to waste.

If more accessory manufacturers would appreciate that most buyers desire to know of what an article is made, and just how it is applied, and at least the principle on which it works, it is probable that their ways would be made happier. Adjectives and strong claims occasionally may create an impression, but it requires more than that sort of thing to sell goods. At best circulars do not receive a particularly warm welcome, and when they convey no real information or highly technical information they rarely find the recipients in a frame of mind to write for further particulars, even though they may have condescended to actually read them.

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COOPER TWICE VICTORIOUS IN CALIFORNIA ROAD RACES

Stutz Pilot Takes Corona Free-for-All and Medium Car Events—Waterman Gets "Baby" Race—Barney Oldfield Wrecked.

Over a three-mile boulevard course solidly flanked on both sides by spectators, Earl Cooper, at the wheel of a Stutz, won both the free-for-all and the "medium" car races that were run under the auspices of the Automobile Club of Corona (Cal.) on Tuesday, 9th inst.; the races were run concurrently, the former going for 301.81 miles and the latter, which was restricted to cars having not more than 450 cubic inches piston displacement, going 251.97 miles. In the free-for-all, Coopers' time was 4.02:38, which is at the rate of 74.7 miles an hour, and in the other event his time was 3:21:29½, which is equal to 75 miles an hour. Ed. Waterman, who not so long ago, in the Santa Monica race, made a name for himself and for the second-hand Buick he drove, by pressing hard the winner, easily finished first in the light car race, which went for 102.45 miles and was restricted to cars having not more than 230 inches displacement. His time was 1:37:20 and his average 67.7 miles an hour—is better than any existing record for the class.

Those who started in the three events and the order of finish was as follows:

FREE-FOR-ALL—301.81 MILES.

Driver and Car.	Time.	
Cooper, Stutz	4:02:38	74.7 m. p. h.
Verbeck, Fiat	4:10:20	72.5 m. p. h.
Hill, Fiat	105 laps	Flagged
Tetzlaff, Fiat	90 laps	Engine trouble
Jeannette, National	77 laps	Flagged
Oldfield, Mercer	59 laps	Wrecked
Magonne, Stutz	41 laps	Magneto trouble
De Palma, Mercer	24 laps	Cracked cylinder
Wishart, Mercer	12 laps	Burned bearing

230-450 INCHES—251.97 MILES.

Cooper, Stutz	3:21:29	75.0 m. p. h.
Caldwell, Marmon	4:09:31	60.5 m. p. h.
Jeannette, National	77 laps	Flagged
Wilsen, Marion	60 laps	
Oldfield, Mercer	59 laps	Wrecked
Magonne, Stutz	41 laps	Magneto trouble
Mansfield, Macomber	25 laps	Engine trouble
De Palma, Mercer	24 laps	Cracked cylinder
Leach, Macomber	17 laps	Engine trouble
Wishart, Mercer	12 laps	Burned bearing

161-230 INCHES—102.45 MILES.

Waterman, Buick	1:37:20	67.7 m. p. h.
Jackson, Reo	1:41:06	60.7 m. p. h.
Goode, Studebaker	1:56:12	52.8 m. p. h.
Owen, Ford	37 laps	Flagged
Rhoades, Studebaker	36 laps	Wrecked
Crawford, Maxwell	36 laps	Wrecked
Schanck, Ford	35 laps	Flagged
Trooe, Studebaker	32 laps	Flagged
Caldwell, Maxwell	20 laps	Engine trouble
Pratt, Ford	11 laps	Clutch trouble

Although several of the cars were wrecked, only one of the accidents proved really serious, and that accident served to demonstrate once more that apparently Barney Oldfield was not born to be killed in or under a racing automobile. In the 59th lap of the medium car race, Oldfield was leading Cooper by a comfortable margin when a wheel collapsed and threw the car and its occupants through a flimsy fence and against a pepper tree. Almost immediately afterward, Oldfield emerged from the wreckage of the car, calmly smoking his cigar, and walked to the grandstand.

The new Corona speedway (so-called) is a beautiful, broad boulevard that encircles the city of Corona, and though it presents probably a smoother surface and less rough going than any other similar course not an actual speedway, it soon became apparent that tire trouble was going to play an important part. As early as the 11th lap, the heavier cars commenced coming to the pits for tires and thereafter nearly all the cars made regular stops.

In the free-for-all, Oldfield early assumed the lead, closely followed by Cooper, who, at the end of 10 laps was 19 seconds behind Barney; a stop for tires put Oldfield back in the 15th, however, and Cooper went to the front only to drop back again in the 19th when forced to stop for tires. From then to the 59th lap, when Oldfield was wrecked, it was a see-saw between him and Cooper for the lead, Oldfield eventually opening up a two-minute gap in the 55th lap. When Oldfield went out, and Cooper moved up, Verbeck took up the running with Hill, a comparatively new hand, third.

As is indicated by the accompanying summary, the winners of the two other events had no great difficulty in keeping ahead of their rivals, Waterman winning by a margin of some four minutes and Cooper by a margin of eight minutes. The prizes that were awarded were $1,000, $500 and $250 to the winners of first, second and third in the light car race, $1,750, $750 and $500 for the three places in the medium car race, and $3,000, $1,500 and $750 for the three places in the free-for-all. A special prize of $1,000 for a new world's record goes begging, for the average of 78.72 miles an hour made at Santa Monica last year was not beaten.

Harry Endicott Killed in Practice.

In practice for an exhibition race which was to have been held the following day, Harry Endicott, brother of William, otherwise known as "Farmer Bill," was killed on a mile dirt track in Jackson, Mich., on Friday last. Endicott was driving a heavy car and the accident was the result of a burst tire, which swerved the machine and crashed it through a flimsy fence. Endicott's mechanician, George Benedict, was badly injured, as was Mrs. Mabel Walters, who was watching the practice; a 10-year-old girl named Mary Sarata was crushed by the car as it tore down the fence, and died later from her injuries. Harry Endicott was 32 years old and made his debut as a racing driver in 1904.



*Indicates Sanction by A. A. A.

Sept. 12, Sandusky, O.—Erie County Agricultural Society's track racemeet.

Sept. 13, Covington, Ky.—Cincinnati Automobile Club's track racemeet.*

Sept. 13, Toledo, O.—Track racemeet under auspices of J. A. Sloan.*

Sept. 13, Milwaukee, Wis.—Track racemeet under auspices of E. A. Moross.

Sept. 14, Seattle, Wash.—Kings County Fair Association's track racemeet.*

Sept. 17-18-19, Norfolk, Neb.—Track racemeet under auspices of A. N. Hughes.

Sept. 18, Asheville, N. C.—Asheville Automobile Club's hill climb.

Sept. 20-21, Fort Wayne, Ind.—Track racemeet under auspices of E. A. Moross.

Sept. 20-21—Detroit, Mich.—Michigan State Agricultural Society's track racemeet.*

Sept. 26-27, Peoria, Ill.—Track racemeet under auspices of J. A. Sloan.

Sept. 27, San Marcos, Tex.—Hays County Fair Association's track racemeet.

Sept. 27, White Plains, N. Y.—Track racemeet under auspices of Geo. T. Long.

Sept. 27-28, Bakersfield, Cal.—Kern County Fair Association's track racemeet.*

Oct. 3, Trenton, N. J.—Inter-State Fair Association's track racemeet.

Oct. 3-4, Oklahoma City, Okla.—Oklahoma State Fair Association's track racemeet.

Oct. 10-17, Paris, France—Annual automobile salon.

Nov. 2-3, Los Angeles, Cal.—Los Angeles to San Diego to Phoenix road race.

Nov. 4-5, El Paso, Tex.—El Paso Automobile Club's road race between El Paso and Phoenix, Ariz.

Nov. 6, Phoenix, Ariz.—Track racemeet under auspices of State Fair Association.

Nov. 24, Savannah, Ga.—Vanderbilt Cup road race under auspices of the Savannah Automobile Club.*

Nov. 27, Savannah, Ga.—Grand Prize road race under the auspices of the Savannah Automobile club.

Jan. 3-10, New York City—Automobile Chamber of Commerce's national automobile show in Grand Central Palace.

Jan. 24-31, Chicago, Ill.—Automobile Chamber of Commerce's national automobile show in the Coliseum and First Regiment Armory.

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ELEVEN PERFECT SCORES IN SEATTLE RELIABILITY

One Fatality Mars Pacific Coast Event Otherwise Distinguished by Much Mud—The Winners in Both of the Divisions.

Although the reliability contest which was promoted by the Seattle (Wash.) Post-Intelligencer was finished as long ago as Tuesday, 2nd inst., the score sheets were found to be in such disorder that it was not until nearly a week later than the final results could be ascertained and winners in the touring car and roadster classes evolved. Of the 27 drivers who competed in the two divisions, 11 finished the run, with perfect scores.

In the resultant draw for the Post-Intelligencer trophy, Jack Campbell, who drove a Michigan car, was the lucky driver; Capt. Smylie (Buick) drew the Ballou & Wright trophy for touring cars; T. F. Barsby (Studebaker) drew the New Washington Hotel trophy for roadsters; Fred Pentroast (Cartercar) drew 10 dozen pints of Rainier beer, also put up as a prize in the roadster division; and E. E. Fick (Locomobile) drew a barrel of oil. To the others who finished with perfect scores engraved certificates, attesting that fact, were presented.

The eleven survivors who incurred no penalizations were as follows: Capt. Smylie (Buick), T. F. Barsby (Studebaker), M. S. Brigham (Cadillac), George Yost (Cadillac), E. E. Seers (Hupmobile), Edward Fick (Locomobile), George Evans (Chalmers), Fred. Pentroast (Cartercar), Jack Lawson (Krit); Jack Campbell (Michigan), and Harry Hastings (Stearns-Knight). The others who competed were as follows: Park Brawley (Stutz), Earl Staley (Studebaker), W. A. Wicks (Franklin), J. W. Johnson (Hudson), Norman Abrams (Speedwell), William Shellhorn (Mercer), E. L. Baker (Franklin), Clayton Gibson (Chandler), Claude Smith (Overland), J. P. Schreave (Metz), Thomas Little (Cadillac), M. A. McCullough (Pope - Hartford), Bruce Griggs (Abbott-Detroit), H. L. Davies (Krit).

Despite the care with which the cars were driven over the 400 miles from Seattle to Hood Canal and return, which for the most part were more than ordinarily rough, and the elaborate precautions which were taken to prevent over-speeding, one accident, which resulted fatally for one of the participants occurred. When traveling at high speed in order to make up time lost on the road, the Havers "six" roadster driven by Harry Gray skidded and crashed through the guard rail on a bridge near Oxbow, precipitating all the passengers onto the roadway. George W. Walsh, Jr., manager of the Seattle branch of Hughson & Merton, accessory dealers, was killed almost instantly and Gray was injured badly; he sustained a dislocated hip and internal injuries from which it is not likely that he will recover.

The route of the tour, which was spread out over four days, led the contestants over a winding trail, skirting Puget Sound, south to Centralia, and thence to Pacific Court and finally to the Hood Canal, where the procession was turned and the journey back to Seattle commenced. During the first two days, the weather remained fine and little difficulty was experienced in making controls on time, despite the rough roads.

During the last two days of the run, however, the rain came down in torrents and what had once been roads soon became little more than seas of mud. In consequence, scores were quickly soiled, for not more than half of the contestants found it possible to plow through the mud fast enough to check in on time. As the contest was run under modified Grade I rules of the American Automobile Association, which provide penalties not only for lost time but for work done on the road and for parts replaced as well, it was no easy task for those who did so to complete the run without black marks to their discredit.

It was during the last day of the run that the worst roads on the route were encountered; the day's run, incidentally, was the longest on the schedule. Heavy rain soon made the going very hard, but owing to the fact that the downpour did not begin until after the cars had left the starting point the running time allowed was not increased. Strange as it may seem, few of the drivers were thoughtful enough to include chains in their equipment, and even those who had them were compelled to go slowly over the swimming roads. Many of the drivers had gone thus far with unblemished records and preferred to take chances rather than to slacken speed and incur penalties and, according to the tales of those who witnessed their skidding feats, the only wonder is that they survived at all.

When Seattle finally was reached, the rain still poured down in sheets, and the finish of the contestants, many of them without chains and slipping and sliding over the wet pavement, was spectacular. Immediately after the checking in was completed the records were turned over to the referee, but owing to their muddled state they had practically to be gone over with a fine-tooth comb before the standings of those who competed could be ascertained and charted.

CLEAN SCORES FOR TWO IN HOUSTON RELIABILITY RUN

Half Dozen Contestants Complete Unexciting 750-Mile Tour in Good Order — Propose Literally to Split Trophy.

With two cars out of the half dozen that started to finish with clean scores, the 750-mile reliability tour that was run by the Houston (Tex.) Automobile Club and that was finished Friday last, 5th inst., furnished little that was thrilling to the participants and not much of general interest to others. "Cold feet," to put it in expressive language, caused the withdrawal of a number of entries at the last minute and, according to report, spread the impression that Houston motorists are "poor sports" for not lending greater support to the contest.

Of the six cars that started—not counting the pacemaker, which was a Cartercar entered and drived by E. Emmert—the two that finished with clean slates were a Jackson, entered by the Jackson Automobile Co., and a Haynes, entered by J. J. Gorman, and as they were tied for the $100 trophy offered the winner, it is planned now to split the trophy in twain and give half to each.

The route that was covered by the seven cars led the motorists to Corpus Christi and return, passing through Brenham, San Antonio and Beeville, and during the three days of the run roads that were really bad were not encountered, though not all of them could be classed as good. Only one near-accident occurred, and it nearly ruined the chances of the perfect score Haynes. Gorman swung his car sharply to one side to pass a wagon and in doing so precipitated one of the front wheels over the edge of the road into the ditch. The momentum of the car was sufficient, however, to carry it back onto the road.

Of the other cars in the run, a Cadillac driven by W. F. Robertson was penalized 11 points for a broken fan belt and an overheated motor; an Overland driven by A. P. Sullivan was penalized 43 points for a broken spring; another Overland driven by W. H. Strong was penalized 151 points for a nut lost off the rear axle collar, which caused much delay; a third Overland, driven by F. S. Roberts, was penalized 513 points.

All along the route of the tour the natives of the small towns through which the motorists passed offered hospitality, and just outside of Brenham a telegram was handed the pacemaker to the effect that a new ordinance had been passed forbidding the tourists to go through without stopping for refreshment.

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"JUST OUT" BUSINESS LOSER

Impossible to Sell Things That Are Not Kept in Stock—Four Out of Five Garages That Were "Just Out" of Transmission Oil.

The habit of being "just out" of certain standard articles needed in the everyday conduct of a garage business continues unabated. Last week four of five Syracuse garages were "just out" of ordinary transmission oil. They all carried it regularly in stock, so they said, but alas, to-day they were "out"!

The fifth garage was that of the Jefferson Garage Co., 428 Jefferson street, Syracuse. They had it, the attendant served it and also inqured if there was not something else the driver needed, reminding the motorist of numerous wares.

"Just Out" Mark of the "Small Store."

The habit of being "out" or "just out" of ordinary things belongs to the small corner grocery and other small stores that stay small. It indicates lack of careful stock-keeping and spasmodic buying. The concern that grows large does so by selling things it has in stock at a profit; perhaps that is why the Jefferson Garage of Syracuse is so much larger than many of the others.

If you have not already installed a complete system that enables you to keep tab on oils, greases and the other supplies you are selling regularly so that you know the condition of the stock almost daily, start one. Such a system need not be complicated and will not be difficult to keep up. It should show the amount of reserve stock, if any, as well as the quantity in cans from which customers are served. Daily checking of sales slips now used in almost every garage against these will show the exact condition of stock at all times and, incidentally, will prove a surprisingly effective check against those mysterious leaks and losses in the gas and oil end of the business.

MENTAL ATTITUDES THAT MAY CAUSE LOSS OF SALES

Negative thoughts—making up your mind that the other fellow will not buy before you have asked him and tried to sell him—are responsible for the failure of more than one dealer and salesman.

"What's the use of calling on him? He won't buy; he's too close," or "he hasn't the money." These are remarks frequently heard when certain prospects' names are mentioned. Has any one seen him lately? No. Has anybody ever really tried to sell him? Well, not recently.

As a matter of fact, when everything is said and done, the only thing that is blocking the sale is the way the salesman is looking at it. The thought every good salesman carries in his mind is "How can I sell him?" not "How can I **not** sell him?" Don't worry over the objections; they will come fast enough when the prospect trains his guns on you. It is up to you to busy yourself developing reasons why he should buy. Study his needs carefully and then you will know exactly how and where your car fits in.

SOURCE OF RETAIL SUCCESS EXPLAINED BY BIG COMPANY

If a successful business man were asked to sum up the source of success in retailing, whether it be drygoods, cars, accessories or any other merchandise, he very likely would scratch his head for a while and then make an answer which, after his questioner had gone, he would recognize as being far from complete—and very poorly systematized. And if he were asked to do the whole thing in 42 words he probably would use more words than that in saying it couldn't be done, but the National Cash Register Co. has presented to its retailers a 42-word "success chart" which is comprehensive.

Success in retailing, it states, comes from:

Work—Physical and mental, by employer, employes, equipment and machinery.

Enthusiasm—in employer, employes and customers.

Knowledge—of wants of customers, values of goods, organization, system, business principles and how to handle clerks.

Study—of selling, purchasing, advertising, system and training employes.

System—in handling cash, credits, accounts, clerks and customers.

TIME LOSSES THAT MAY BE CUT BY TIME-CARD SYSTEM

A shock-absorber salesman had been getting his device placed on cars by a certain garageman who shall be nameless. A flat price of so-much per car had been agreed upon. Then men in the garage took so much time putting on the shock-absorbers that the salesman began to wonder how the proprietor could afford to do it. He watched the men and soon after called the proprietor's attention to the matter. He had discovered the secret.

Time All Charged to Repair Jobs.

The men did not care how much time they took because the time was all charged up against cars on hand for repair anyway. The business was just so much clear profit. When the salesman spoke to him about it the proprietor was indignant. "Bring in the time-tickets for yesterday and I will prove it to you," said the salesman: and the salesman did so.

This is one of the ways that a garage earns a bad name for itself. It is hardly the sort of thing that commends itself to the man who wishes to be honest. It is going on, nevertheless, in a good many places. The time-card system that will permit such a practice to flourish is out-of-date. More accurate and thorough systems should be installed.

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AWAKE N DISING WORLD

COURTESY A SALES ESSENTIAL

Without It Man of Cleverness or Knowledge Is Heavily Handicapped — Ford Manager Says It Is as Essential as Oil in Engine.

"Cultivate courtesy," is the urging of Gaston Plantiff, Ford's New York manager. "It is one of the factors in the make-up of the good salesman. It is something that is due the public and cannot be developed to too high a degree. It is too often taken for granted by the man selling the car that the public is as well posted as he is on the intricacies of a machine and his answers to questions are made with an air of abrupt superiority.

"Not only in words is courtesy expressed, but in the manner of delivering them. Make all your answers as comprehensive as possible and be certain that you are qualified before doing so. Your customer will feel at home and it will ease the road to the final sale.

Courtesy Increases Value of the Man.

"Courtesy is like oil to the engine, it makes friends of those you meet and increases your value to the organization which you represent.

"Cultivate every customer you do business with. It pays in the satisfaction to yourself and good-will to your firm.

"Courtesy is far-reaching. By taking care of the little things in the beginning, it means that you meet the same men in larger deals in after years.

"The salesman with ambition to go higher cannot lose sight of courtesy. He may be the mirror of fashion, a technical expert and so forth, yet lacking the human touch of tolerance, he will have to take a back seat to his brother salesman who is possessed of the milk of consideration.

"Consideration of the ordinary conventionalities goes a long way. If a lady is in the party looking at a car, don't have your hat on. Don't have a cigarette in your mouth. And if you do not make a sale don't get peeved. Escort the party to the door, express your regrets and impress upon them that if they are not satisfied, to return and you will be glad to go all over the matter with them once more.

"Granted that a good percentage of those you have dealings with are stubborn and seem hard to please, don't lose your temper. The majority of people are human and the salesman whose daily work brings him in contact with the public should appreciate the fact that he is expected to measure up to the standard of courteous handling."

MAKING REPLENISHMENT OF GASOLENE MORE CONVENIENT

Convenience of arrangement by which customers can be served quickly with a minimum loss of time on the part of both the garage and the customer is well worth time and thought. Some garages keep their gasolene in the rear, so that cars seeking replenishment must drive through the garage and then back up and turn around to get out again. This is decidedly inconvenient, for by the time a car has been filled up there frequently will be another car back of it and both must waste much time jockeying for position and room to get out.

The Geneva Auto Co., Geneva, N. Y., solves the problem in an up-to-date manner by having a door labeled "Entrance" through which cars must drive into the garage. This pathway takes them straight to the gasolene pump and oil supply, leaving the car in line with the door labeled "Exit." On the other hand, the Baker Bros. Auto Co. have their pump stationed at the right side of the door going out from the garage and a room containing the stock of oils and greases on the left, so that customers going in or coming out can be waited on with utmost speed.

That Baker Bros. are looking after the pennies as well as the dimes is indicated by the installation of a penny-in-the-slot match device and gum machine, also near the door.

ABSENCE THAT MADE HEART GROW FONDER OF OTHER CAR.

A car purchaser on whom some very vigorous effort had been expended without apparent result came into the store of a Hamilton (Ont.) dealer and inquired for the proprietor. The proprietor was out. When would he return? The office girl did not know and there was not a soul in the shop who had a clue to his whereabouts. The car purchaser hung around for exactly 90 minutes, according to the girl, and then went down the street and bought from a nearby dealer whose salesman had made almost as good an impression with his car.

Such an episode does not occur often, but it made that Hamilton dealer realize that there was a possibility it might happen again unless he left word as to where he could be reached when absent during business hours. A lesson of the sort drives home a point that is of great importance.

PLACARD THAT ASSISTS IN KEEPING GARAGE BASIN CLEAN

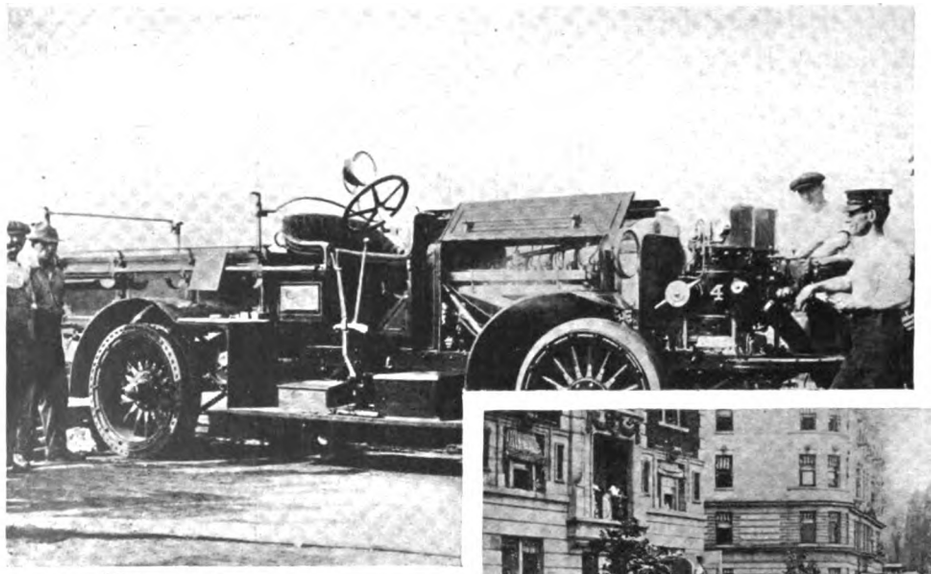
Has any attempt ever been made to clean the wash-basin in your garage? True, it gets dirty and "looks like sin," but why not adopt the plan of one dealer who manages to keep his basin fairly clean most of the time by the adoption of a very simple expedient. Right over the basin, at the height of the average eye, is a card reading:

PLEASE!

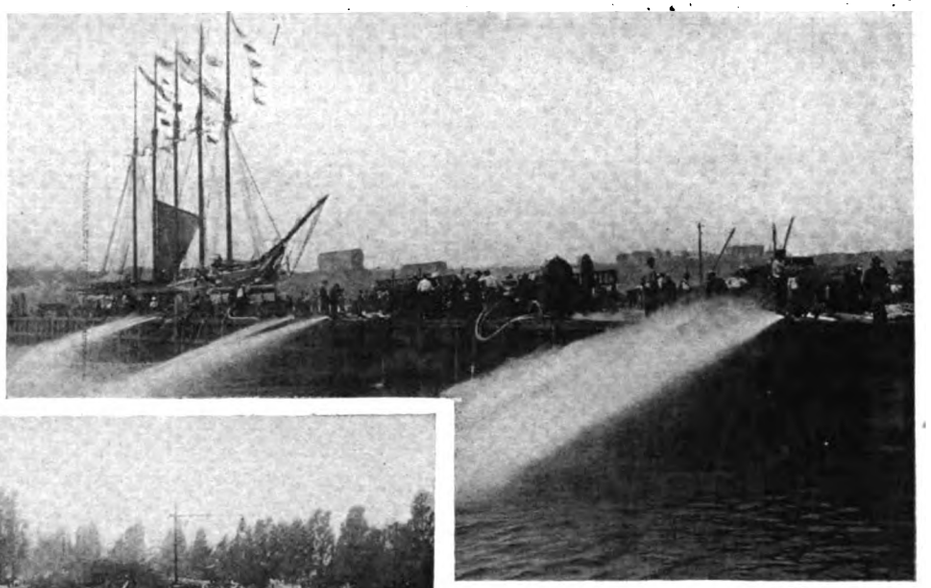
This basin is for the convenience of our customers. When through using please use the brush and the "Dutch Cleanser," so basin will be clean for the next user. Thanks!

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WHERE THE GASOLENE FIRE ENGINES DISPLAYED THEIR CAPACITIES FOR THE BENEFIT OF THE VISITING CHIEFS



AHRENS-FOX—ONE OF THE LARGEST ENGINES DEMONSTRATED

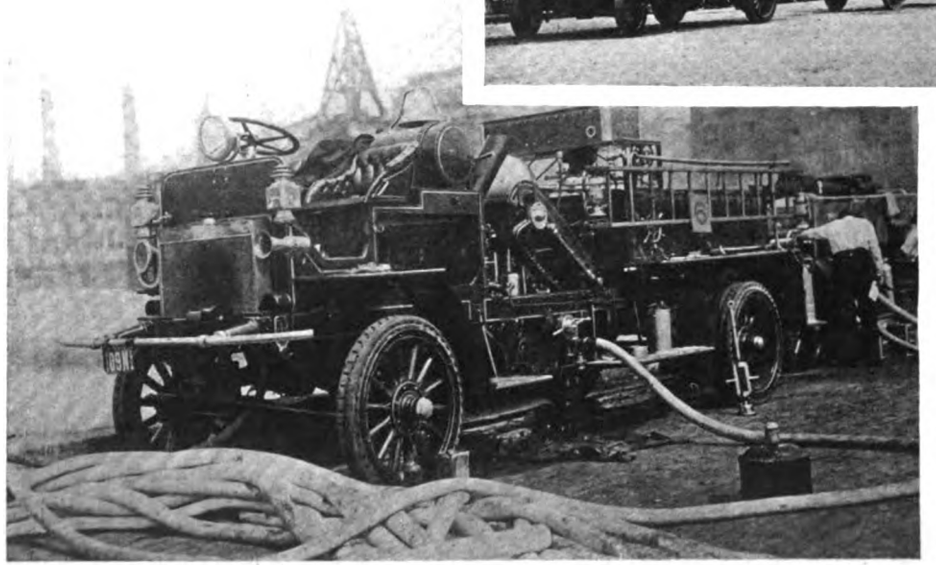


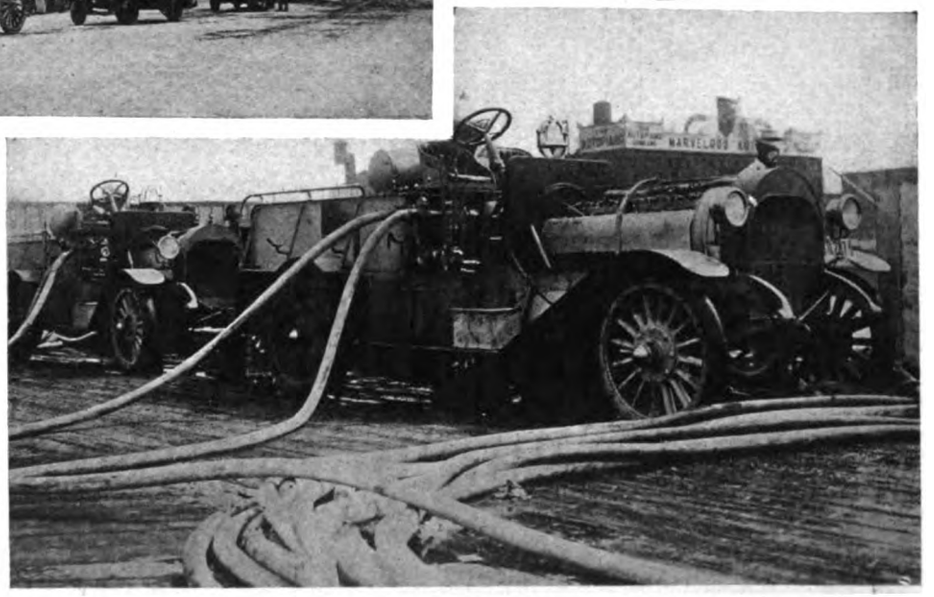
VIEW FROM RIVER SIDE SHOWING MIGHTY STREAMS PUMPED



KNOX ENGINE SHOWING CHAIN DRIVE TO PUMP

TWO OF THE SIX-CYLINDER NOTT ENGINES AT WORK





SECTION OF THE PARADE THAT CLOSED THE CONVENTION

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ASOLENE FIRE APPARATUS IS PUT THROUGH ITS PACES

:leven Massive Engines Pump Eight Million Gallons of Water—Parade and Unveiling Wind up the Convention.

Eight million gallons—count 'em—of lirty salty water were pumped out of the North River on Wednesday last week and pumped right back again before the gaze of the fire chiefs of the world, who, as was told in Motor World last week, were gathered in New York City for the Forty-first Annual Convention and Fire Exposition of the International Association of Fire Engineers.

All the pumping was part of a demonstratiton, of course, and, quite as much a matter of course, it was a demonstration of motor-propelled fire apparatus, for there is scarcely anything that interests the fire departments of the world just now more than do gasolene engines. All day long, 11 massive engines were lined up on a dock at the foot of West 54th street and nearly all day they pumped the North River through lengths of fire hose, and smoked and made a fearful din. And even though the din may have been to the liking of some of the fire chiefs who watched the demonstration, it was not to the liking of them all, and not a great many of them stayed to the end.

As early as six o'clock in the morning the tests were commenced, and for six hours the engines were required to be run at full capacity, or very near to it, the exact requirements being a continuous run of six hours at 120 pounds pressure, the water to be drawn through three lines of hose from the river and discharged through a single nozzle. During the whole time the tests were in progress the scores were posted on an immense blackboard nearly a city block in length. During the first hour readings of the discharge rates of the various engines were taken every minute and posted up, but before long the amount of work involved in this method became apparent and the intervals between readings were lengthened out to five minutes. Even then the number of figures appearing on the blackboard was appalling, and their final condensation into readable and understandable statistics likely will require some time. Suffice it to say—and these are the only figures available as yet—that the 11 engines together pumped no less than 700,000 gallons of water during the first hour of the test. Until the official scores of the machines have been checked by the committee in charge no results will be divulged.

The engines that were used in the test were those that were housed in Grand Central Palace during the convention of the chiefs, and after they had been put through their paces at the 54th street pier the public was given another opportunity to view them in the mammoth parade which occurred on the following day. Although there were a few pieces of horse-drawn fire apparatus in the parade, the line-up was principally made up of motor-propelled engines, and the display served to make very plain that even though the horse may not be disappearing as a draught animal in trade it most certainly is disappearing, and disappearing very fast, from city fire departments.

Serving as a fit conclusion to the parade, and virtually to the Convention, for the following day was given over almost wholly to pleasure, the Firemen's Memorial Monument was unveiled on Friday afternoon by four little girls, dressed all in white, whose fathers had lost their lives fighting the flames. The monument itself stands at Riverside Drive and 100th street and is of marble in the form of a votive tablet flanked on either side by groups representing Duty and Sasrifice. On the eastern side of the monument the dedication inscription faces the street and is as follows:

"To the men of the Fire Department of the City of New York who died at the call of duty, soldiers in a war that never ends, this memorial is dedicated by the people of a grateful city."

During Saturday, the fire chiefs were entertained aboard the steamer Grand Republic, which carried them to Coney Island, past New York's fleet of fireboats lined up in review and spouting great streams of water from every one of their various nozzles. At Coney Island, all the bathhouses and pretty nearly everything else was free to any one in a fireman's uniform, and most of those who travelled down to the sea took advantage of the privileges accorded them. In the evening, and during nearly every other evening while the convention was on, the cares of the fireman's life were laid aside temporarily and the chiefs and their wives and daughters laughed or grew serious over the offerings of the various playhouses in the city.

It is proposed to hold the next convention in Norfolk, Va.

Two Branches With Silver Lining.

C. T. Silver, the metropolitan agent for Overland cars, has placed two of his branches—those in Brooklyn, N. Y., and Newark, N. J.—on a profit sharing basis, so far as the managers are concerned. The latter, C. G. McGregor, of Brooklyn, and C. M. Dow, will each share in the profits of their respective branches to the extent of 40 per cent. annually.

TWO WESTERN FAIRS HAVE AUTOMOBILE EXHIBITIONS

Dealers in Indianapolis and Milwaukee Stage Early Shows at County Expositions—The Exhibitors and What They Display.

"About this time," the farmer's almanacks should say, "look out for County Fairs," and they well might add, "automobile shows"; for apparently the practice of exhibiting automobiles along with prize cattle and horses and farm truck grows apace and the automobile exhibitions at such annual functions grow larger. Sizable expositions are drawing crowds in two large Western cities—Indianapolis and Milwaukee. In both of these cities, State fairs were opened on Monday, 8th inst.

In Indianapolis dealers were not so fortunate in obtaining space within the exhibition grounds as they were in the other two cities, and as a result some of the 16 exhibits are housed in the Studebaker pavilion, a structure affording some 10,000 square feet of floor space, and the others will be housed as near by as possible. The complete list of exhibitors is as follows:

Cole City Sales Co., Cole; Ford Motor Co., Ford; H. T. Hearsey, Hupmobile; Nordyke & Marmon Co., Marmon; Indiana Cadillac Co., Cadillac; Oakland Motor Co., Oakland; Peterson-Keyes Auto Co., Regal; National Motor Vehicle Co., National and Hudson; Motor Car Mfg. Co., Pathfinder; J. I. Handley Co., American and Marion; Gibson Auto Co., Overland and Garford and Willys truck; McFarlan Six Sales Co., McFarlan and Federal and Standard trucks; Auburn Automobile Co., Auburn.

In Milwaukee, 50 makes of cars are housed in a mammoth exhibition hall of concrete consisting principally of a roof sustained by immense pillars, the whole being more like an open-air show than a palace exhibition. The list of exhibitors is as follows:

J. I. Case T. M. Co., Case; Kissel Motor Car Co., Kissel; Mitchell Automobile Co., Mitchell and Detroiter; George W. Browne, Overland, Stutz and Garford; Creek Motor Sales Co., Oakland, King and Empire; Buick Motor Co., Buick; Hickman-Lauson-Diener Co., Ford; Wisconsin Auto Sales Co., Chevrolet; F-S Motors Co., Petrel; Imperial Auto Sales Co., Imperial and Krit; R. D. Rockstead, Warren and Paige; Curtis Automobile Co., Reo; Carter-Car-Wisconsin Co., Carter and Crown truck; John Tellier, Jackson and Hupmobile; Chase Motor Truck Co., Chase; The White Co., White; T. E. Allen Co., McFarlan and Marathon; Thos. B. Jeffery Co., Rambler

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"My Best Sale and Why I Regard It as My Best"

Salesmen Tell of Satisfying Achievements in Competition for Motor World Awards for Stories of "My Best Sale"—Real Sales Effort and Square Dealing and Two Signatures Which They Drew to Contract Blanks.

By C. W. COLE, Boston, Mass.

CONFIDENCE OF THE BUYER WON BY REFRAINING FROM BELITTLING OTHER CARS

I learned that Mr. ———, of Boston, was in a position to buy an automobile and that if the right man came along and influenced him into the thought, he could be sold a car. I paid him a visit at his home one evening and talked along the line of the comfort he and his family would derive in the use of a car. He seemed somewhat interested before I left him, and he told me that he would think about it and advise me.

Friend Demonstrated a Rival Car.

I did not hear from him for three days, so I made it a point by accident to call at his office. He informed me that he had talked to a friend who owns another make of car and had promised him to take him for a demonstration in it that afternoon. He took the demonstration and, of course, was more or less pleased, for his friend was a strong booster for that car and called his attention to the excellent features the car possessed.

This demonstration caused several motor car salesmen to get on my prospect's trail, and then the fun started. I made it a point to try to get in touch with him every day, but he refused to give me an audience until he had heard the other salesmen's stories. After waiting a day or two, I paid him another visit at his home and got a rather chilly reception—he claimed he had practically concluded to buy a car of another make. I did not stop here, but put on more steam than ever, though I never said anything about any other car.

Salesmen from all parts of the country have narrated stories of their "best sales" in the contest which Motor World has just brought to a close. In this issue men from Boston and Kansas tell of orders they "put over" by real and clever salesmanship. One sale was as good as lost but was saved by an afterthought that flashed when the prospect had gone. Both required hard, honest and consistent sales effort.

Got the Whole Family Out for Ride.

I succeeded in getting the whole family out for a short ride that very night, and upon our return home I accompanied them into the house. We all joined in the talk and, of course, all kinds of arguments and criticisms were thrown at me, but I had the goods and believed in them, and just put forth every effort to show them where our car was superior to any other car on the market for anywhere near the price; I dwelt on the subject of unexcelled long life and service, and our ability to furnish parts for any of the cars we have ever built.

Sticking to Own Car Won Confidence.

The evening soon passed, and it was filled completely with talk on our car alone. I gradually learned the equipment that Mr. ——— would have on his car if he were to buy one, and I filled in the order blank as we went along. I footed it up and found it amounted to $2,225. I passed it over to Mr. ———, he looked it over carefully, and I kept right on feeding the ideas of confidence in our car to him and sidestepping all questions he put to me regarding other makes as best I could, and at 12.15 A. M. he finally signed the order. In so doing he said, "I am going to be frank with you; I am giving you the order not only because you have won my confidence, but I have carefully noted in every talk I have had with you that you have never said an unkind thing about any other make of car, but have worked wholly and solely on your own product."

By R. E. CURTIS, Lincoln, Kan.

REFUSAL TO SUPPLY EXTRA TUBES AND HOW IT CONVINCED PROSPECT OF DEALER'S FAIRNESS

Although it seems to me that my sales are easily made, since I keep at the prospects from time to time until I have finally landed them, there is one sale which I made a short time ago which impresses me as being my best because I made it after the prospect had become angry and left the salesrooms.

Wanted a Cut as Matter of Principle.

I had been working on this prospect for some time, but we could not agree as to price; he had gotten cut prices from two other dealers, and I believe his principal desire in getting me to cut was to have the satisfaction of fixing the price on what he was going to buy. I finally convinced him that I could not reduce my price, as the company which makes the car had set it low in the first place and did not allow us to alter it.

Although he was convinced that I was right in refusing to cut the price, that didn't end it. He then wanted me to throw in a couple of tubes for $5 extra, whereas I had told him the tubes were $8.50. I refused to do so, whereupon he became about half angry and walked out and down the street.

That set me to thinking, and I picked up my order book and started after him. When I had caught up with him I said, "Do you know that if I wanted to I could have given you a couple of cheap tubes that don't cost half what the ordinary tubes cost and you wouldn't have known the difference?"

"I hadn't thought of that; I guess you're right," he replied.

Afterthought Worked in Application.

At the same time I was writing up the order, and as soon as I got through he said, "Let's see that order, anyhow." As he looked it over I sharpened a pencil and handed it to him. He took it and signed up, saying, "I guess you might as well get one ready for me. I believe you are square and will treat me right. I'll have to give you credit for it, since you wouldn't take advantage of me on those tubes."

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RIPLE CAST CYLINDERS IN LATEST PACKARD "38"

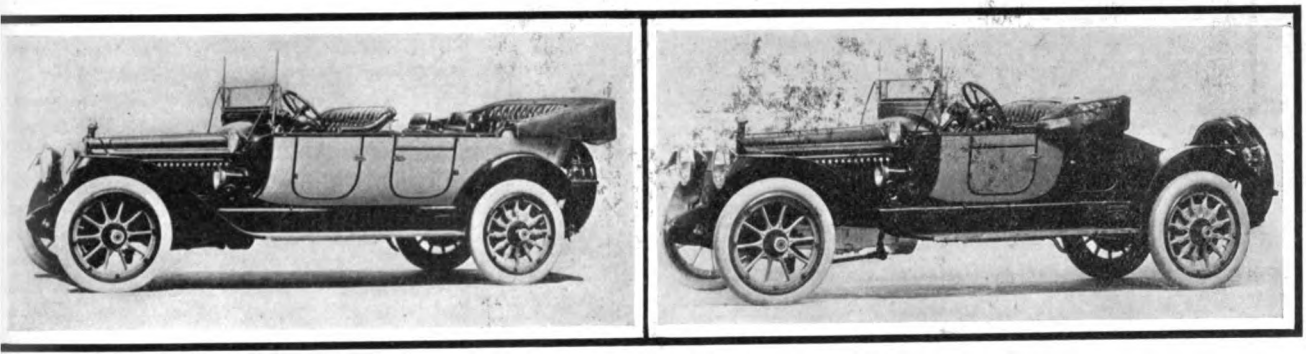
mensions Remain the Same, How-ever, and Few Other Changes Made—Oiling System Refined and Bodies Beautified.

With $400 lopped off the price of the ndard chassis, and a number of detail im-ovements, including a new clutch and a w method of casting the cylinders, the ckard light "six." otherwise known as "38" now has added to its designation

ing the cylinders, which now are in sets of three instead of in pairs, as they always have been in the past. In changing over from pair-cast to triple-cast cylinders, Packard engineers have had in view, among other things, the positive elimination of back pressure in the exhaust manifold due to the overlapping power impulses, and this very desirable feature has been surely obtained by the simple expedient of providing a double manifold with separate exhausts for each set of three cylinders. The arrangement of the cylinders in sets of three has other important advantages, of course, not the least desirable of which, overlooking the possibility of greater rigidity, is that a

rectly with the spark plugs. The only wiring visible leads from the magneto distributor to the end of the open conduit; not more than a couple of inches are exposed.

Although the number of blocks of cylinders has been reduced, the shape of the cylinders themselves remains unchanged and, as heretofore, all the valves are on the one side, nor have the cylinder dimensions been changed, though by reason of the new exhaust manifold and other less apparent refinements the power curve now reaches to 60 horsepower at 1,800 revolutions, although the nominal rating is a conservative 38 horsepower. The bore and stroke are 4 inches and 5½ inches, respectively.

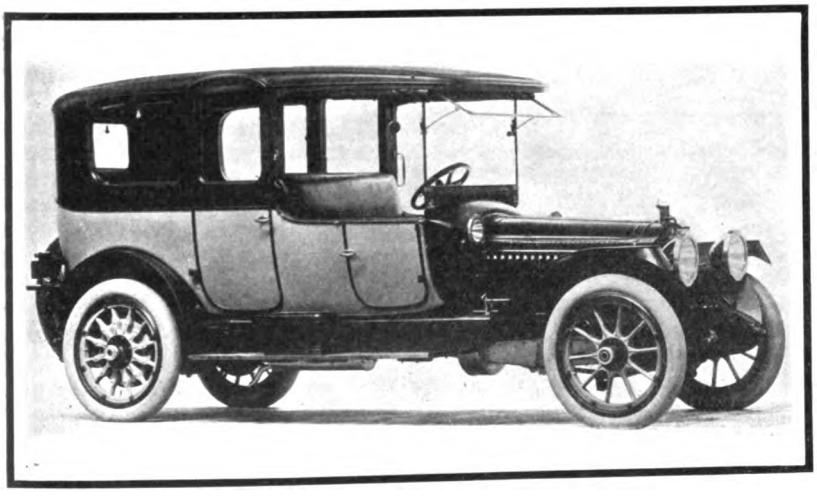


PACKARD "238" TOURING AND ROADSTER MODELS SHOWING NEW HOOD AND BODY LINES

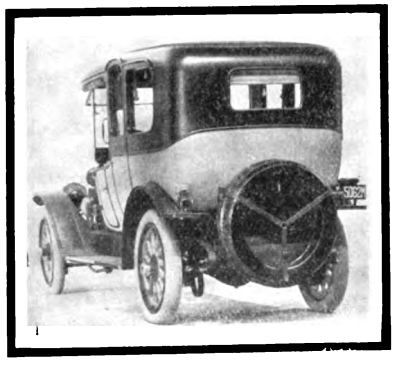
umerals one more figure and hereafter will e known as the "238," the addition serv-g to signify that the new model is in real-y the second series of this particular chas-s produced by the Packard Motor Car

much more compact motor is possible and that greater simplicity follows this method of construction as a matter of course. In the Packard engine this feature of simplicity has been particularly cultivated and

The lubrication system of t' ..otor operates on the same principle adopted some time ago and used with such success ever since, though an obvious improvement has been made in the elimination of all outside piping. The oil is forced to no less than 35 main bearings by means of a gear driven



SEVEN-PASSENGER LIMOUSINE SHOWING ARCHED DOOR



SMOOTH AND ROUNDED CORNERS

Co., of Detroit, Mich. The standard chas-is now lists at $3,100 instead of $3,500.

Other than the adoption of the distinc-ively new type of worm bevel driving gears vhich were fully described and illustrated n Motor World bearing date of August 4th, the only really important alteration n chassis design is in the method of cast-

is well exemplified in the housing of the valve mechanism and the careful enclosing of all wiring; from the high tension Bosch magneto that furnishes the ignition spark a conduit leads to a vulcanized rubber distributor mounted atop the cylinders and on this distributor there are mounted small knife switches connecting di-

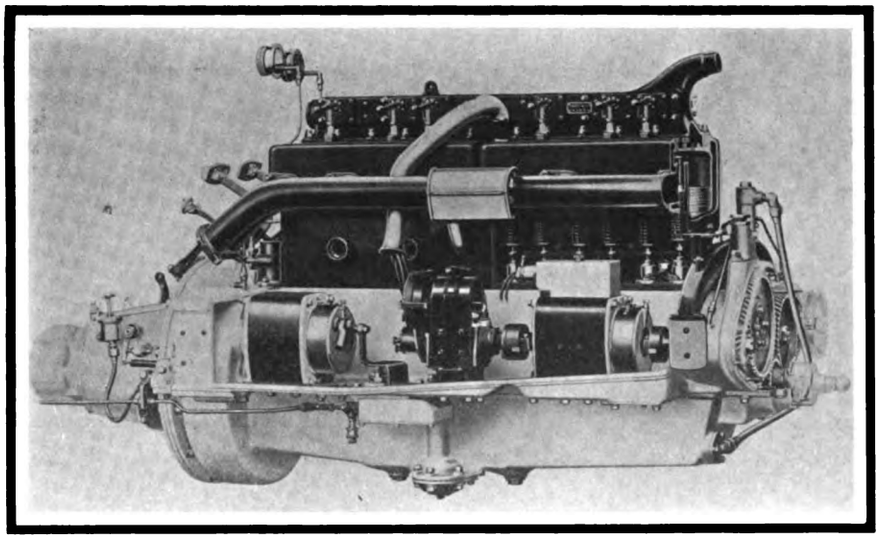
pump, this constituting the main system and the only system in use for ordinary running. For heavy pulling, however, or when the throttle is opened wide, an auxiliary oiling system comes into use and oil is forced directly to the cylinder walls; control of this system is interconnected with the throttle lever. To assist in proper vaporization of the fuel mixture, a hot water jacketed intake manifold has been adopted.

In the electrical apparatus forming part

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of the equipment—the Bosch high-tension magneto, and Packard-Bijur lighting and starting system—complete segregation of the three units has been effected. The lighting generator is driven from the spiral timing gear train and a straight-through shaft drives the magneto. The starting motor is another unit and connects through the flywheel.

As heretofore, the motor and clutch form a single rigid unit, the flywheel being completely housed. In the clutch, a number of detail refinements, calculated to increase smoothness of action, have been made

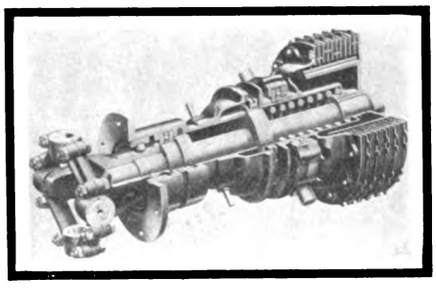


MAGNETO SIDE PACKARD "238" ENGINE SHOWING WIRING

though the device as a whole remains of the dry plate multiple disk type. The gearset, which provides three speeds forward and reverse, is mounted as a unit with the differential mechanism on the rear axle, which is of the floating type. The chassis is mounted in front on semi-elliptic and in the rear on three-quarter elliptic spring members proportioned to give the maximum of resiliency with the minimum oscillation. Two sets of brakes are employed, of course, the service set being external contracting and the emergency set internal expanding; bayonet locks prevent rattling. The wheelbase of the standard chassis is 140 inches.

The external appearance of the newer series Packards has undergone very little change; it may be summed up in a slightly more accentuated taper to the engine hood and the addition of a mud apron at the front between the fenders. Naturally, the steering column remains on the left side and no change has been made in the location of the control levers, which also are at the left. Engine controls, lighting switches and carburetter adjustments all are centralized in the distinctive Packard steering column switchboard. Gear shift and emergency brake levers have been refashioned to permit of easier entrance to the driver's compartment.

As usual, the Packard company permits an unusually wide latitude for choice with regard to body styles, no less than 19 distinct types being cataloged. Among them, the standard six-passenger open touring cars hold prominent place and to the line there has been added a new six-passenger body which, while not appreciably different from the standard bodies in appearance, nevertheless lists at $500 less than do the regular models; the chassis upon which it is mounted is the standard Packard chassis, of course. The remainder of the standard bodies includes five-passenger phaeton, roadster, limousine, landaulet, imperial limousine and imperial landaulet, five-passenger brougham and inside driven coupe; for the



PACKARD DRY PLATE CLUTCH

first time, a seven-passenger touring car is regularly listed.

As usual, equipment is complete and includes a "one-man" top which has a number of distinctive features all its own. As the designation implies, the top may be raised and lowered by one man without assistance; furthermore, both tonneau doors and the right front door are fitted with attachments which permit the side curtains to open when the doors are opened, thus obviating the necessity for unbuttoning curtains and rebuttoning them. Incidentally, the tonneau doors are wide, affording easy entrance and exit, and the running boards are quite clear, spare tires being carried at the rear of the tonneau.

Another "wrinkle" in equipment is the provision of an efficient ventilator for the front compartment. It is in the form of a long shutter extending the length of the windshield and is regulated by a small lever within easy reach of the driver. In all the closed bodies, the ungainly and often unmanageable strap window adjuster has been eliminated and its place is taken by modern window regulators operated by a usually hidden lever. Folding auxiliary seats with arms are standard, though Pullman type seats are optional. The seven-passenger enclosed bodies retain the curved back and arched doorway, but the six-passenger bodies have square corners and a lower roof.

S. A. E. Deliberates on Rim Strengths.

At a meeting of the pleasure car wheels division of the Standards Committee of the Society of Automobile Engineers which was held at the New York headquarters of the society on Tuesday night, 9th inst., it was tentatively decided, as the result of tests, to advocate a bursting strength of 200 pounds in the rims for 3½ to 4 inch tires and 225 pounds for 4½ to 5 inch tires. Rims that were tested were divided into two classes, those having no side rings being in one class and those having side rings being in the other. In tests which were completed by the Goodyear and Hartford companies, 69 out of 87 rims tested survived; in the Hartford company's tests 18 clincher and 10 straight side rims failed; the Goodyear failures being 12 clincher and two straight side. The failures of the clincher rims were due largely to the rolling over of the retaining rings. It is proposed to place the matter of rim strength standardization in the hands of the Clincher Tire Association for debate.

Negro Ex-Champion Takes up Spring Tire.

Marshall Taylor, of Worcester, Mass., who, better known as "Major" Taylor, was one of the world's wonders during the heyday of the bicycle, and the only negro who ever made his mark in that sport, has evolved a spring tire, and for the purpose of making and marketing it has organized the Major Taylor Mfg. Co., which is being incorporated under the laws of Maine with an authorized capital of $1,000,000. E. O. Leonard is Taylor's chief assistant in the project. The tire, which will be called the Major Taylor, is designed chiefly for motor trucks. Unlike so many other bicycle champions, Taylor saved his earnings and invested them in Worcester property.

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BEING A FATHER TO FIVE THOUSAND CAR OWNERS

Service the Big Dealer Is Called Upon to Render and Is Able to Give Because He Is a Big Dealer—Cadillac Distributers in Metropolitan District Believe in "Quick Satisfaction."

There are close to 5,000 Cadillac cars running in what is known as the Metropolitan District and the number is growing. Men—and not a few women—who never owned cars before buy Cadillacs and some who have owned other makes buy Cadillacs, but the particularly pleasing thing to the Cadillac people in New York is that those who have once dealt with them generally come back when they want another car. And why?

Service that Was of Countless Value.

At 3 o'clock one afternoon not many days ago a telegram came to the Cadillac establishment on Columbus Circle from a New York man who was touring New England in his Cadillac. It had been filed in a little mountain town some distance north of Bretton Woods, in the White Mountains of New Hampshire, 300 or more miles from New York. It said the owner had met with an accident which crippled his car. He didn't make demands for immediate relief or lay down the law as to what he expected would be done; he had dealt with the Cadillac people long enough to know they would at least do what was fair and right, but what they did do he had never dreamed of.

The wire came at 3 o'clock; Ernst H. Brandt, the general manager, bade an expert repairman get ready for a trip; what tools or parts he needed were packed and the repairman was on the train leaving New York at 5 o'clock—two hours after the wire arrived. The repairman traveled all night and arrived in the mountain village at 7 o'clock the next morning; he hunted up the car, set to work, and was not long in putting it in shape for the road. That night he returned to New York. The trip cost $24.80 and the man's time, but it didn't cost the owner anything. His car was laid up only about half of one afternoon, and he was an intensely happy individual when he was enabled to continue his trip the next day. Some day this man will want a new car, and when he does he probably won't "shop" up and down Broadway to find which one he wants. Any car might have taken him to Bretton Woods, but Cadillac service was what got him back.

Service may mean almost anything in the automobile trade; some dealers who haven't anything else to shout about shout service and the service is mostly shout; the dealer shouts before the sale and the owner shouts afterwards. It cannot be gainsaid that the term is much abused and is held up oftentimes and shaken to attract the prospect's attention while he is signing the order blank, after which he finds that the glittering prize he was to get is as substantial, tangible and valuable as a Budweiser "collar."

Promises Little but Does Great Deal.

Service is something which is valuable in a dealer's advertising and is equally valuable as advertising, and comprehensive as is that given to Cadillac owners in New York it is little mentioned in advertising; but as advertising it does good work.

The company promises to render service for 90 days—no more; but, despite the promise, an owner who is in trouble never fails to find relief in the service establishment. Even what might be regarded as unreasonable requests are granted, if possible During the recent convention of fire chiefs in New York City the chief from New London, Conn., walked in, announced that he was a Cadillac owner, that his city was sending several pieces of fire apparatus to New York to take part in a convention parade, and that he wished to quarter the apparatus in the service station. His sole claim to the favor was that he was a Cadillac owner—but it proved to be claim enough, and all the New London firemen made the service station their headquarters during the convention.

Satisfaction Leads to More Business.

A man in Southampton, L. I., had trouble with his lighting system; it was a lubrication trouble, pure and simple, and was due to the negligence of the chauffeur, which the service men made plain but which did not prevent the same old trouble cropping up several times. It was the chauffeur's fault, but each time the difficulty was remedied and the owner was kept satisfied. In fact, he was so well satisfied that he is now getting a limousine body for his car.

Another owner, who lives in Larchmont, N. Y., is one of a class which sometimes "kicks" on the service—but the "kicks" are welcome. He notified the service establishment that his car was out of commission, and a repairman was dispatched to his residence. The repairman monkeyed around for about five minutes, then stuck his hand into the motor, gave something a twist and went home. The owner, who had expected the repairman would put in several hours, was disgusted—with himself. He wrote a letter to the Cadillac dealers, told them what he thought of himself, said he refused to accept the adjustment as free service and demanded that a bill be sent him for the repairman's time.

A somewhat different attitude was that of a wealthy man who one day sent his car to the service department for a repair that

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would require a day or so, although whenever possible all cars are turned out the same day they are received. This owner demanded that another car be given him to use while his own was in the shop; it was his idea of service and if put into effect would compel the dealers to maintain a fleet of nearly one hundred substitute cars on such days as Mondays. When this owner was told the granting of his request was impossible he informed the dealers of his financial connections in the automobile trade and threatened to "get their jobs," but according to latest bulletins they are still in business.

Help Extended to All Who Come.

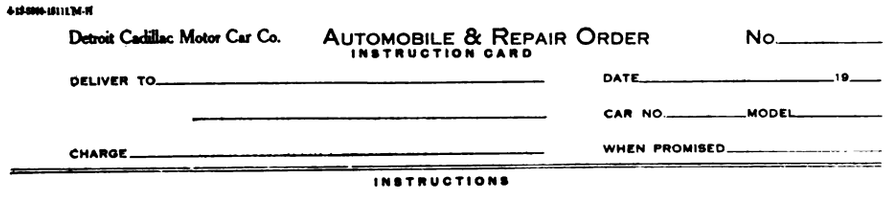
Not only to metropolitan owners is service extended, but to motorists from every State in the Union; during the summer when touring is popular Cadillac owners, from two to a dozen a day, drive to the service statiton and seek garage accommodations. These cars are kept over night with no charge, although the owner comes from a town miles away and will never buy a car in New York, but the spirit is one of boosting for the whole Cadillac line and not for the New York dealers alone.

Along the boosting line, but not intimately connected with service, is the missionary sales work which is done for dealers in all parts of the country; tourists from everywhere, visiting New York, seem to find pleasure in inspecting the models on the floors of the metropolitan salesrooms The New York salesmen use their best persuasive powers on these prospects, who go home and buy of the dealer in their own town. This applies, probably, to all New York and other big city salesrooms.

These instances indicate what real service may include and while it is model service it probably is not within the reach of some smaller dealers; the big dealer, with several thousand cars in his territory, can do more than a smaller man in the same territory. It is just like big and little stores—the big store can afford to deliver a 50-cent order in quick time, whereas the little store, with less extensive delivery equipment, cannot always do it. The dealer with but two repairmen could not well afford to send one 300 and the other 50 miles away to take care of complaints; it would tie up his shop; wherefore the big dealer's service approaches nearest the ideal.

"Quick Service" the Dealers' Ideal.

Brandt, the general manager, well expressed his companys' idea of service when he said, "We aim to give satisfaction in the shortest possible time." The man in Bretton Woods might have been satisfied had his car been repaired in two days, but he was much better satisfied when a repairman arrived as quickly as trains could carry him. Speedy turning out of cars which need fixing up is a fetish. When an owner drives into the service building an expert tester immediately takes the car in hand and, like a physician, diagnoses the case. If it is something which can be fixed in a short time, the job is turned over to the repairman and the car is turned over to the owner at once.


Detroit Cadillac Motor Car Co. AUTOMOBILE & REPAIR ORDER INSTRUCTION CARD No._____

DELIVER TO_____ DATE_____ 19__

CAR NO._____ MODEL_____

CHARGE_____ WHEN PROMISED_____

INSTRUCTIONS

CADILLAC DEALERS' SERVICE AND REPAIR ORDER BLANK

If it is a job which requires a longer time it is sent to the Cadillac shops, on West 62d street; the company is preparing a new home in the old Panhard & Levassor quarters at Broadway and West 62d street, and meantime the "shops" are located across the street in a six-story building, about 100 x 60 feet. The plant is in charge of E. R. Mertens, who for 13 years was superintendent of the Columbia Motor Car Co.'s factory in Hartford, Conn., and a force of about 125 men is employed. The building contains equipment sufficient to build a complete car and, in fact, bodies have been built there for several ambulances now running in New York.

"Shops" Provide for Larger Repairs.

When a car needs more than a quick-time repair the work to be done is typewritten on an order card, 7¾ x 9 inches, which contains blanks for the owner's name, account to which to be charged, date, when promised, etc. Carbon copies are prepared for filing and several other purposes and the original goes to the shops. Mertens recently devised a holder for keeping the cards clean and for preventing their becoming detached from the car with which they belong; the device is a celluloid envelope with cloth-bound edges in which the card just fits. A cloth strap affords a means of attachment to a car, on the steering wheel or some other part. Not only does this prevent the card's becoming unduly soiled, but there is no likelihood of cards getting mixed with the possibility of the repairmen taking the motor out of Bill Jones's car and putting a bumper on Bill Smith's car when things should have been the other way about.

When the car is turned over to the workmen each workman checks off with his initials each part of the work as fast as he completes it. If anything is not correctly done the check mark shows who is to blame, wherefore little is incorrectly done. The same system is applied to new cars, which are looked over and lubricated before they are placed in the hands of an owner. If lubrication proves deficient and the card shows that Pat Casey did the job the superintendent has a conference with Casey, and it is needless to add that Casey seeks to make these conferences as few and far between as possible.

"Lubrication" Cause of Most Trouble.

Brandt was asked what caused the majority of what might be termed "unreasonable" service requests. "Lubrication," was his quick response. "Many men who drive cars neglect lubrication, and when things go wrong they seldom can see where they are to blame. They insist that they kept the oil reservoir full and that something else must have been the trouble.

"Also, it can't be called trouble or anything like that, but we are called upon more and more every day to extend assistance to women. The electric starter has caused a large increase in the ranks of women drivers and they, of course, require more attention than men, so far as things mechanical are concerned. But we are glad to help them, for it encourages them and others to drive cars."

While the Motor World man was talking with Brandt a woman walked up to his desk and asked when she could have a bumper put on her car. She seemed familiar with what would need to be done and discussed the matter with a mechanical intelligence that was commendable.

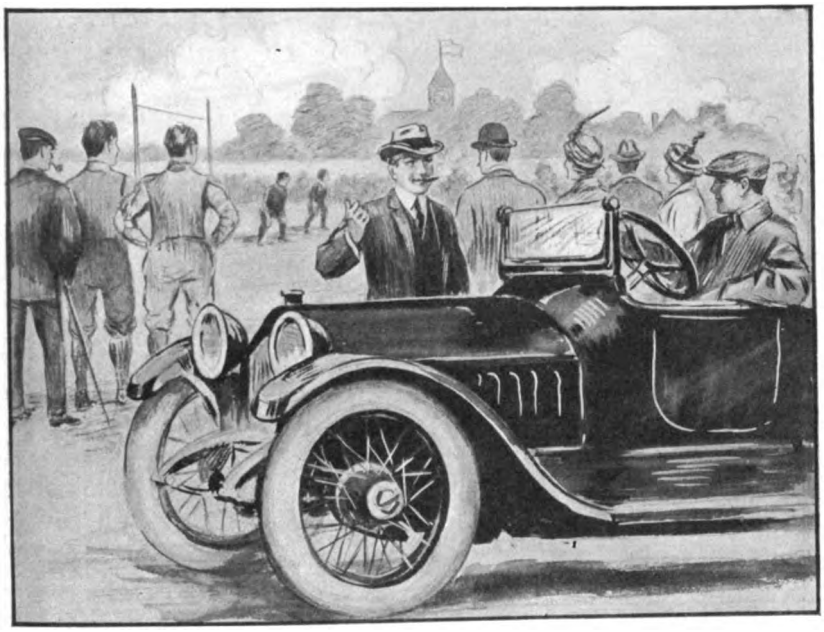
Many, probably a majority, of the Cadillac owners in New York drive their own cars, and on the days following Sundays and holidays the service station is busy. With 5,000 cars on the road in one pleasant day, numerous little things are bound to develop, so that Mondays and after-holiday-days see between 50 and 100 cars in for attention. But Sundays, holidays or at night the service station is open. Two crews of four men each are on the job to meet any emergency.

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CULTIVATING HEAD WORK—LEARNING TO THINK

Reilly Advises Those Who Would Rise Above Their Level to Make Full Use of Their Thinking Powers—Emergency Tactics of a Quarterback Illustrate Dealer's Talk to His Salesman.

Young "Chuck" Krevett slapped the uards on their backs, became tense for a ıoment as he made a noise that sounded ke a miscellaneous selection from an arithıetic, dropped back for a forward pass nd the center of the high school's first eam snapped the ball to the waiting quarterback. Krevett cast an eye at the line and at the spot where his right end was supposed to be waiting for the ball. but before the end reached the position a "scrub" tackle, plunging with outstretched arms, was within a couple of yards of Krevett.



"WERE YOU THINKING OF GOING BACK TO THE OFFICE?" SMILED THE SALESMAN

"Aw-w-w-w-w!" groaned Reilly, who had spent a half hour watching the scrimmage. "Hurr-a-a-a-y! Good work, Chuck!" was the change effected in his tune of disappointment as the quarterback dropped back a step, let the tackle plunge on his face in the turf, and leisurely but accurately sent the ball for a good 15-yard gain.

"Some head on that kid!" exclaimed another mature townsman as he pounded Reilly on the back.

"That's real brain work!" replied Reilly with just as much gusto and as many thumps, and then he joined in the general silence as young Krevett again began a mysterious quotation from the arithmetic.

While the canvas-clad lads were extricating themselves from the heap, which was three yards further along than the last one had been, Reilly's attention was drawn by a car at the side of the field and which looked suspiciously like his demonstrator with his salesman at the wheel.

"Weren't thinking of going back to the office, were you?" smiled the Salesman as Reilly guiltily drew near the car.

"Guess I am about an hour overdue," admitted the dealer.

"More or less, mostly more."

"But the kids are going to have some team this fall," enthused Reilly as the Salesman let in the clutch.

"Pretty good, are they?"

"Better than that. And that young 'Chuck' Krevett! He's the best quarter they've had in years."

"Is he any relation to Krevett of the City Auto Supply?" inquired the Salesman.

"Sure! Krevett's his father; the kid's got a head just like the old man, too. He can think of more darned things and more ways of getting out of a tight hole than anyone I know."

"Did old Krevett ever play football?"

"Not that I know of," answered Reilly, "but a head is good for something besides football, isn't it? The old man plays business just like the kid plays football, and they're both making successes of what they're——"

"Bastian says Krevett's a bum salesman."

Creative Ability as Differentiation.

"Bastian's a sorehead!" snapped Reilly. "Just because he can't sell cars and because Krevett's making good he's sore. Krevett, the day he began, was better than Bastian is today. One thing which differentiates the two is their respective head work or creative ability. All Bastian knows about selling and business is what he sees some one else do or what some one tells him. He couldn't think up anything original in a million years."

"Have you known Krevett long?"

"Quite a while," replied Reilly. "I knew him when he was a salesman on a salary—and he was some salesman, too! He used to travel for the Mace Carburetter Company, and he climbed fast. Krevett always was possessed of a creative turn of mind and was always trying to conceive something better than any one else had done, or trying to think up some new scheme or plan that would bring greater and quicker results than any system then in use. Bastian values other men's ideas—if he recognizes them at all—for the good they can be if incorporated in his business; Krevett, when he spots another man's idea, doesn't grab it as a good thing and copy it, but tries to go it one better, and generally he does so. He uses his head every minute."

"No ruts for him, eh?"

Salesman Whose Thinking Helped Him.

"None at all," continued Reilly. "The company sent him out to sell carburetters to anyone who would buy them, but their greatest desire was to get the stuff specified as stock equipment on manufactured cars. Krevett got away with his quota of business and the company didn't have any complaints to make, but one day he suggested a boosting scheme that, while it would entail more work for the salesmen, would produce greater results in the end. His idea was to work on the manufacturers through the dealers.

"His scheme was to sell carburetters,

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just as they had always been sold, but in addition to convince the dealers that the carburetter was a good thing. Some of the salesmen kicked when a little extra work that didn't bring immediate orders was loaded onto them, but the company adopted the plan. The salesmen were instructed to work on the dealer every chance they got, persuade him to try out a carburetter on one of his cars, see that it gave him satisfaction and get the dealer to boost it. The result was that a sentiment for the Mace carburetter began to grow, the dealers suggested it every time anything went wrong with the regular stock carburetter, and that practically forced or led a lot of manufacturers to put them on.

Evolved Plans and Schemes of Selling.

"He was so good at the business that they took him into the factory as assistant sales manager. He was thinking, thinking, thinking, twenty-four hours a day, it seemed. He must have dreamed of his work. He evolved more original schemes for pushing sales and inaugurated business wrinkles and systems, and when the sales managership was open he got it. If he saw a chance to do a little extra work he jumped in and did it, and if there was a nasty bit of responsibility to be shouldered he was under it and walking away with it before anyone had a chance to worry about dodging it."

"Some worker."

"And he never was stumped by an emergency; he exercised his head so much that it seemed to work automatically. Nothing ever came up that he couldn't think up a way out of; he used his head just like young 'Chuck' does. You should have seen that kid fool a tackle and make a forward pass this afternoon. But after a while he realized that he had gotten about as good a job as he could with the Mace people; they were paying him all they thought they could, and he began to think up something better for himself.

Store Popular Because it is Different.

"He looked things over and decided that it wouldn't be a bad thing for his old age to have a business that he could turn over to the kid, so he started the supply store. And he's been thinking and using his head ever since, and is to-day. Everybody knows about Krevett because he's different. His store is different; it's alive and moving. Where other supplymen copy, he leads; he thinks, uses his head, and by the time some rival has copied one of Krevett's schemes Krevett has a new one that is much better. Creative work is his specialty and it makes money for him."

"He's got a great personality, hasn't he?" commented the Salesman.

"Yes, he's more or less gifted that way," replied Reilly, "but a great many salesmen —any man, for that matter—could surprise themselves if they would learn to use their heads—and think. In the case of hundreds of men, there is no necessity for their plugging along for years in the same rut, on the same level, at the same salary. If Krevett hadn't made his thinker work he probably would have been traveling around to-day on his same old job of selling carburetters.

Lack of Thought, not of Ambition.

"He would have remained merely an average salesmen who was moderately satisfactory to the company and he might have kept the job until he got so old they had to put him on the shelf.

"It isn't a lack of ambition; many men are ambitious, but they don't seem to make the start. They just hope, hope that some day they are going to get a better job; one big trouble with them is that the better job is the one big object within their range of vision; they don't realize that they ought to try to be a little more than satisfactory. Everett was not required to advance that carburetter boosting scheme, and when he broached it to the company he probably never thought much about how much of a raise in salary it would bring him, but it was just a chance to go one better on the existing method of selling and he was glad to see the Mace people get the benefit of it. His own promotion was a secondary consideration and was thereby made more certain.

"Kids who work in shops, clerks in offices, men and women in every walk of life, get themselves above the common level in just that way. The clerk who plugs along and does just what is required and no more can keep on doing just that and no more as long as he doesn't prove so unsatisfactory that he isn't any use any longer."

Advises Salesman to Seek Opportunity.

"Trying to get me to thinking, are you?" asked the Salesman.

"I'm not aiming anything at you; I'm just talking about Krevett," answered Reilly, "but I will say this, that if you make full use of the head God gave you you won't be with me many years longer. You are pretty handy with your gray matter, if I do say it, but I can't do much better by you than I am, and if you want the advice of a friend —not your employer—quit me the first chance you get at a better job and a field of greater opportunity.

"To ask you to hold yourself back just because it would benefit me would be selfish on my part and I hope I'm too good a friend to you to do it.

"Too many men consider themselves handicapped in the business world when they are failing to make use of the assets with which nature endowed them. They don't make their heads help themselves. Young Krevett has seen scores of backfield men tackled when they were trying to make a forward pass, and if he had followed precedent he would have stood there and lost the play, but he used his thinking machine and won where precedent said he should have failed—and it didn't take much intelligence, either."

"You used to be a halfback, didn't you?"

"But they didn't have forward passes in my day."

"They say a good football player learns to be good-natured under all circumstances; is that where you get yours?" asked the Salesman.

"Not at all, not at all," replied Reilly. "It's the sunniness that goes with poverty."

"Huh!" ejaculated the Salesman. "If poverty brought happiness I'd be in hysterics all the time."

International Adopts Part-Payment Plan.

In order that the lack of ready capital may not prevent a business man owning a truck, the International Motor Co., of Broadway and West 57th street, New York City, has inaugurated a part-payment plan of sale for Mack and Saurer commercial vehicles. The purchaser pays 25 per cent. in cash at the time of purchase and the remainder in 12 notes which mature within a year at the rate of one each month.

Close Organizes a Rubber Company.

Due chiefly to the efforts of Mont Close, the Bowling Green Rubber Co. has been organized in the Ohio city of that name for the purpose of manufacturing tire accessories and other rubber goods. It is capitalized at $25,000. Close will be its manager and C. W. Greene, of Toledo, will be in charge of the sales department.

Olds Re-Establishes Pittsburgh Branch.

The Olds Motor Works is reestablishing its branch in Pittsburgh, the premises 5040-42 Baum street having been leased for the purpose. It will be in charge of George S. Morrow. The Olds company maintained a branch in the Smoky City until about three years ago, when its account was turned over to dealers.

"Yale Mfg." Becomes "Yale Muffler."

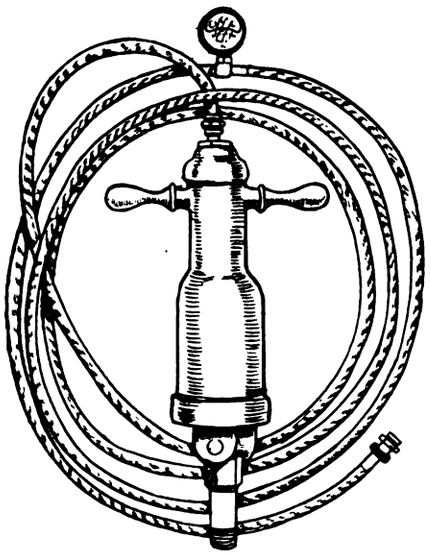
F. A. Tuschen, of Milwaukee, and Andrew C. Scheurell, of Sun Prairie, Wis., who purchased the assets of the bankrupt Yale Mfg. Co., at Gooseberg ,Wis., have changed the name of the enterprise to the Yale Muffler Co. In addition to making mufflers, however, they will manufacture several automobile accessories.

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SPARK PLUG PUMPS TO INCREASE GARAGE PROFITS

How One Wide-Awake Garage Proprietor Discovered a Real "Elastic Hose," or What Corresponded to One—Types of Cylinder Tire Inflators—Construction and Operation of Simple and Compound Pumps.

Service is, and always has been, the backbone of good business. Give a man what he wants when he wants it and he will come back for more; give him a little more than he wants—or expects—and he will pass the good word along to all his friends and the foundation of a perfectly good endless chain of business will be laid down. It is the principle upon which more than one big



WOODWARD HANDLED PUMP

business has been built, and it is the principle upon which Billy Rea, whose story was told in Motor World of June 26th, built up his garage business; and he has gone right on building it up in a manner that is suggestive of his insight into human nature and also of his foresightedness.

Helps Himself by Helping Others.

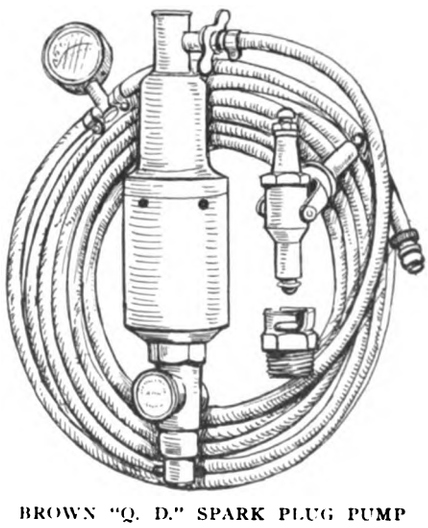
Billy Rea, be it remembered, is a humanitarian; but he places a broader meaning on the word than did Daniel Webster. Webster says that a humanitarian is a person who believes that man's duty is limited to right doing toward others. Billy Rea rather amplifies the definition, or sees deeper into its meaning. He figures that in doing right toward others he is also doing right toward himself. And that is why he equipped his garage with a small air compressor and invited his patrons to make free use of it. It was good for them and it was good for him; it was service in the broadest sense of the term.

One day when one of Billy Rea's "star boarders" had finished inflating his tires and was coiling the air line up over the hook, he said:

"Billy, you're a good fellow; dust doesn't stick to me now the way it used to stick, for I don't work myself into a sweat pumping tires before I leave the garage; but your air hose isn't long enough; it won't reach me when I'm out on the road." "You ought to have an elastic hose," he added, as an afterthought, chuckling at his own attempt at a joke.

"Elastic" Hose that Reaches Miles.

Right then and there a great big light broke in on Billy Rea, but he did not climb up on the roof and shout it out. He had seen in his mind's eye the patrons of his garage bowling over rolling boulevards secure from tire trouble because they made liberal use of his free air and kept their tires properly inflated. Now he saw one of them on a hot, dusty road; the motorist

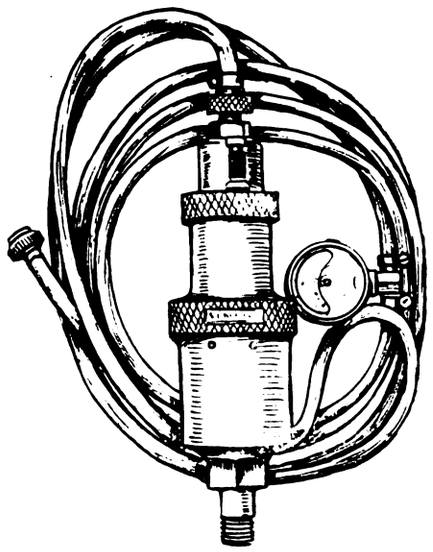


BROWN "Q. D." SPARK PLUG PUMP

was bending over and straightening up rythmetically, and every once in a while he would stop to kick his front tire or to wipe the perspiration off his face. No need to explain what he was doing.

"Gee, whiz!" thought Rea, as he visualized the scene. "I give 'em all the free air they can carry, but they can't carry more than they can put into their tires; I can't give 'em a can of air to tuck under a seat! An elastic hose is what I need, all right, and I'm going to get one or know the reason why."

Now, two of the cars in Rea's garage at the time were the latest models then available; like all other modern cars they carried more than ordinarily complete equipment. So he cautiously lifted the hood of first one and then the other and took a slant at the tiny little power tire inflators snug-



SIMPLEX SIMPLE PUMP

gling next to the magnetos. Nothing doing; he shook his head. "Too much fitting and fussing," he soliloquized. "Sanderson would never stand for all that work on his old Acme; neither would Campbell (Campbell had a sort of mongrel car, but it was a pretty good mongrel); maybe Rand would stand for the price, but he always kicks like fury at even five minutes' delay. Guess I'll have to give it up. No, I won't either—leastwise not until I have a look through Supplyem's catalog."

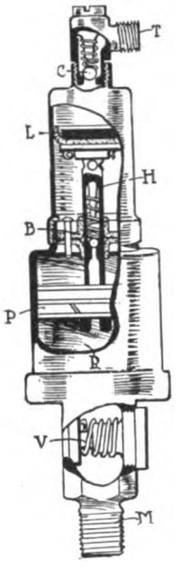
Supplyman's Catalog Gives Light.

So he looked through Supplyem's catalog—and he found that he really could get an elastic hose; a hose that would stretch from his garage up into the mountains or down to the seashore or anywhere else that motor cars are likely to go. Only it was not styled an elastic hose. It was called a spark plug pump and it was exactly what he was looking for.

There were several different kinds of

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spark plug pumps listed in the catalog—as any one else can discover if he is so minded—but he could not quite figure out how they worked—how without any visible connection between the source of power and the pump they forced air into the tires. "Remove a spark plug, replace it with the pump, attach the hose to the tire valve and start the engine," is what the catalog stated, and it appeared to be simple enough. Obviously there was no fitting to do; no machine work and no delay. Would such a pump work on any engine? He consulted the catalog and found it would—provided the engine was of the four-cycle type, and as most engines now-a-days are four-cycle engines there seemed no reason for passing up his new-found "elastic hose." He bought one and tried it on the man whose



MAYO CONSTRUCTION

humor had first suggested the possibility of an elastic hose. That man took it along the next time he went out and luckily (for Rea) got a puncture. He tried the pump; it worked; there is not much more to the story.

He told Rea is worked, but Rea knew that already, for he had tried it as soon as it came in. But what is more to the point, he told all his friends about it and his friends told their friends, and they all flocked around as fast as he showed them and thereby hangs the moral.

Spark Plug Pumps Added to Stock.

Rea saw what was needed and he provided it; it just happened to be pumps, this time, but if it had been anything else he would have provided it just the same; he already carried a small stock of spark plugs and grease and wrenches and grease guns and the hundred and one other things a motorist wants in a hurry, and those who kept their cars in his garage bought their supplies from him because they could get them when they wanted them; no need to wait till they got "down town." Now, Rea is looking for something else to add to his stock, and as soon as he finds it he will stock it—but he won't keep it, for he won't buy it till he knows it really is wanted, and then he will sell it. He doesn't keep things; he sells them.

Simple and Compound Construction.

As for the spark plug pump that Rea has in stock—it is a good deal like several other spark plug pumps there are on the market but it is not exactly like any of them. As a matter of cold fact, they all look a good deal alike, but each differs slightly from the other and each has its individual features. They are common only in that they all fit into the top of one of the cylinders in place of a spark plug, and that, briefly, is why they are styled spark plug pumps.

There are two distinct types of spark plug pumps and they operate on two different principles. One of them operates on the simple principle and the other operates on the compound principle. In the latter class, the Mayo, which is produced by the Mayo Mfg. Co., of Chicago, Ill., is a good example and the accompanying part sectional drawing will make plain just how it works.

The thread that fits the spark plug hole is designated M and to attach the pump it is only necessary to remove the plug and screw in the pump with the hands; a wrench is not needed. On the suction stroke of the cylinder the metal piston P is drawn downward and at the same time the valve V opens, admitting air into the combustion chamber of the cylinder. Live "gas" is not sucked through the carburetter because the tension on the valve V is light.

How the Air Gets into the Tires.

On the compression stroke of the engine piston the air in the engine cylinder is forced upward into the chamber R and then through an opening in the center of the piston, through the check valve B, and to the small chamber H. On the next downward stroke of the engine piston, the air in the chamber H is compressed and forced past the leather-faced piston L. The air then is above the smaller piston L, and on the next compression stroke of the engine cylinder the air is forced through the check valve C and to the tire through the connection T.

Though it not infrequently has been supposed that spark plug pumps employ "gas" for inflating the tires, it should be clear from the foregoing description that such is not the case. Actually, nothing but pure air is compressed and forced into the tire. Similarly, it should also be plain that it is well-nigh a physical impossibility for oil or grease to be pumped into the tire along with the air. In the first place, very little oil is required properly to lubricate the pump, and in the second place it is extremely unlikely that oil from the engine cylinder could find it way through the pump to the tire hose, unless the engine were raced—and if the engine is raced the pump automatically locks itself. The pump will operate only when the engine is run slowly.

The Brown impulse tire pump, which is produced by the Brown Co., of Syracuse, N. Y., and which operates on practically the same principle as the Mayo, is distinctive in its method of attachment to the engine cylinder. The equipment, as may be seen by the accompanying illustration, consists of a special spark plug with a separate center electrode fitted with a tiny handle.



NATIONAL INTERNALS

When the pump is to be operated, it is merely necessary to remove the center electrode from the spark plug, by means of the handle provided for the purpose, and insert the pump, which is held in place by means of a bayonet lock. The shell of the spark plug thus remains permanently in place. With the Brown pump, as with the Mayo, it is not necessary to disconnect the second spark plug if a dual ignition system using two sets of plugs is employed, for the mixture in the engine cylinder is disturbed and rendered useless for power purposes by the air admitted through the pump valve.

One Piston Larger than the Other.

All the spark plug pumps illustrated employ a double piston, which is to say, the upper piston is considerably smaller in diameter than is the lower one, and the reason for this difference in size is not difficult to understand. If both pistons were the same diameter, for instance, it would

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not be possible to obtain higher air pressure in the tire than is obtained in the engine cylinder on compression stroke. With a smaller pumping piston, a smaller amount of air is forced along the tube at each stroke, and as the power behind the piston remains constant, the pressure obtainable is higher.

Spark plug pumps that operate on the simple principle differ from those that operate on the compound principle in that there is no connection between the two chambers in the former other than the piston itself. In other words, there is no by-pass for the air between the two chambers; the upper piston is integral with the lower one, hence there is absolutely no possibility of "gas" being pumped into the tires. In the compound pumps, this possibility is eliminated, of course, by the air inlet valve.

Internal Mechanism of Simple Type.

The construction of the simple spark plug pump is well illustrated by the part sectional view of the National pump which is reproduced herewith. The pump itself is manufactured by the National Motor Supply Co., of Cleveland, Ohio, and is exactly alike in principle to the Woodward pump, which is produced by Woodward & Son, Toledo, Ohio, and the Simplex, which is distributed by the American Auto Supply Co., of New York City. Another pump, quite similar, is produced by the Dewey-Anderson Co., of Toledo, O.

The operation of all three of them can be gathered quite readily from the sketch of the National pump, which shows the smaller of the two pistons and the inlet and outlet valves. When the piston in the cylinder to which the pump is attached descends on the intake stroke, the vacuum formed in the cylinder sucks down the lower piston in the pump, and as the upper piston is made integral with the lower one, it, too, is drawn down, creating a partial vacuum in the upper cylinder, which is relieved by air rushing in through the inlet valve. When the engine piston commences its compression stroke, the two pistons in the pump are forced upward by the pressure in the engine cylinder and the air in the pump cylinder is forced along the tubing to the tire. As there is always an air cushion between the pump piston and the ends of its cylinder, the operation of the pump is noiseless.

No Wrench Needed for Any Plug Pump.

With none of these spark plug pumps is it necessary to use a wrench; it will suffice to screw the pump in place with the fingers for the leak at the threads is so slight that the operation of the pump is not affected. The Woodward pump differs from the other two in that it is provided with insulated handles which always remain cool, regardless of the length of time the pump is in use.

When any simple spark plug pump is put to work, it is absolutely necessary to remember that if two sets of spark plugs are used, the ignition current must be cut off from the remaining plug in the cylinder to which the pump is attached. If the ignition cable is not disconnected, the cylinder will fire with probably disastrous results to the pump. Double precaution is necessary in this respect, for as it is necessary to stop the engine in order to insert the pump it is a natural proceeding to start the motor again on the battery—and if the battery ignition apparatus is connected through the other plug in the cylinder with the pump, the pump likely will go sailing; at least, it is more than likely to be harmed.

It is doubtful if there is any one who drives or who rides in an automobile who has not heard the stern injunction, "Keep tires well inflated." The tire makers themselves make plain on every occasion, and without provocation, the necessity for proper pressure in tires. Hence it is not necessary to explain why 60 or 70 or 75 pounds to the square inch is essential—depending on the size of the tire—if any kind of satisfaction from tubes and shoes is to be expected. Suffice it to say that if a piece of copper wire is bent back and forth continually, it will break in very short order, and this is exactly what happens to a tire that is improperly inflated. The sides give and spring back into position alternately until finally the shoe blows out. Billy Rea, humanitarian garage proprietor, knew this, and that is why he fitted his garage out with an air compressor. But he knew, too, that no one can foretell when or where a puncture will occur, and that is why he fitted out his patrons with spark plug pumps.

A. A. A. Disqualifies Many Drivers.

For competing in an unsanctioned event, Harold A. Hall, Fresno, Cal., has been suspended by the A. A. A. contest board until January 1st next. R. H. Pennebaker, of Memphis, Tenn., and Charles B. Perry, of Santa Ana, Cal., both of whom failed to report for races in which they were entered, were disqualified until January 1, 1914.

For competing in an unsanctioned hill climb in Mount Vernon, N. Y., the following riders were suspended until January 1, 1914: C. R. Kenyon and A. N. Kerr, of Yonkers, N. Y.; B. B. Kendig and N. Brown, Mt. Vernon, N. Y.; E. H. Bowman, White Plains, N. Y.; John S. Clark and A. S. Jenks, of Portchester, N. Y.

H. Van Wyck, of Hartsdale, N. Y., who also competed in the Mount Vernon event, felt a heavier hand, being suspended until September 1st of next year, while S. G. Thebaud, Jr., of White Plains, was placed on the shelf for an even longer period—until September 1, 1915. Thebaud's offense was driving a G. J. G. car under the false name of N. E. Smith.

All of the drivers, owners and officials who had to do with an unsanctioned event on a motorcycle track in Philadelphia on August 12th last were disqualified until January 1, 1914. They are F. C. Bishop, V. P. Padula, George H. Jones, Eddie Bauer, J. C. Dunsmoor, C. B. Higgins, J. Signor, Frank Shaw and W. B. McCullough.

Savannah Road Races Now in Doubt.

Whatever prospect there was for the return of the Grand Prize and Vanderbilt road races to Savannah, Ga., this fall seems very slim at present, and it is not wholly unlikely that the events will be called off. According to Harvey Granger, president of the Savannah Automobile Club, who traveled to the Elgin races to induce drivers and manufacturers to invade Savannah, differences have arisen which make it improbable that a large enough list of entries to warrant the holding of the two contests will be forthcoming. Granger has let it be known that both drivers and manufacturers have demanded that all entrance fees be waived and that in many instances freight be paid on machines both to and from the scene of the races. Granger is emphatic, however, that all entrance fees must be paid, and that unless there is a satisfactory entry list by Oct. 15th the events will be abandoned.

Cyclecars Only to Round Lake Michigan.

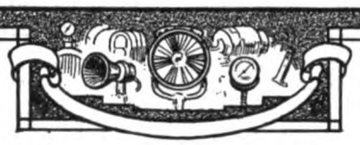
Because of lack of entries—only six were received—the Chicago Motor Club decided at a meeting held on Thursday last to abandon its second annual reliability tour, which was to have led the tourists around Lake Michigan and would have started Monday, 8th inst. It is likely, however, that the division of the run restricted to cyclecars will be held, as preparations for it still are being made. No date for the event has been set, nor will one be named until a sufficient number of entries, in the opinion of Chairman Charles P. Root of the committee that has the work in hand, is received. Root himself is making ready to start a cyclecar publication.

Truffault-Hartfords Plentiful at Elgin.

Although Truffault-Hartford shock absorbers always are well represented in nearly every track or road racing event of any prominence, it is not often that they are as well represented as they were at the Elgin races of August 29th and 30th. Of all the 20 cars that rolled over the 8½-mile course in the two events, not one was without Truffault-Hartfords.

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RECENT DEVELOPMENTS in ACCESSORIES



To Facilitate Starting in Winter.

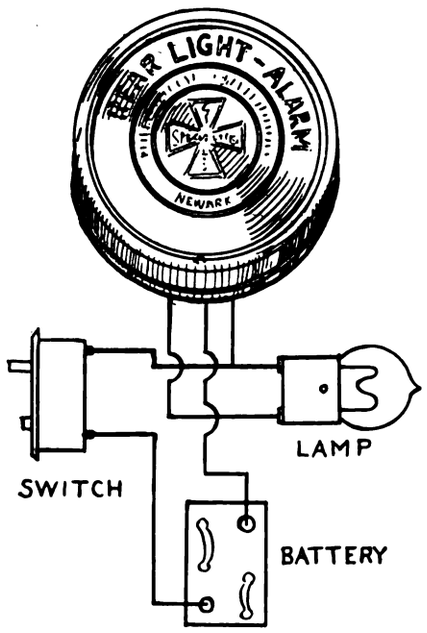
As everyone, or nearly every one, knows, or ought to know, it is not always the easiest thing in the world to start a cold motor on a cold morning, though this is no fault of the motor; it is simply because gasolene does not vaporize as easily when it is cold as it does when it is warm, and every one ought to know that, too. To make starting easy, the Volcano Electric Primer Works of Virginia, Ill., has developed an electric device which not only warms the gasolene but provides it as well.

The whole apparatus, as it is attached, is shown by the accompanying illustration and consists of a small receptacle which is attached to the back of the dash and which holds a small amount of gasolene, a length of wire and a plug which is inserted in the intake manifold between the cylinders and the carburetter. Depression of a button on the dash permits a small quantity of gasolene to flow from the miniature tank to the intake plug when subsequent pressure on a push button makes the circuit between a battery—any battery, whether used for starting and lighting or for ignition—and the plug thus heating the plug and vaporizing the gasolene. "Live gas" thus is liberated directly in the intake manifold, and this, when mixed with air drawn through the carburetter when the engine is cranked, forms a sufficient quantity of highly explosive gas to ensure an easy start. It is pointed out by the makers that the apparatus can be installed on any motor in not more than 30 minutes.

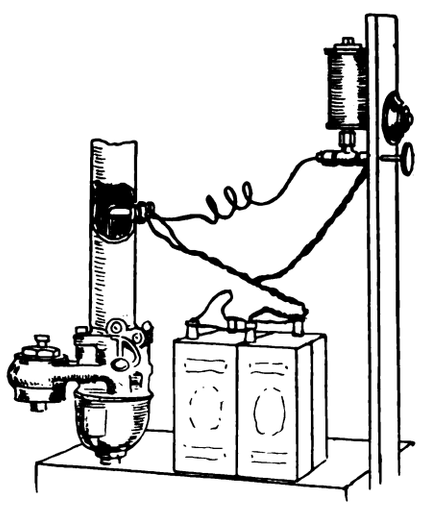
Here's the Electric Rear Light Alarm.

Although the practice of wiring tail and dash lamps in series so as to provide an indication of the failure of the tail lamp is fairly common, there are those who are disinclined to burn dash lamps all the time the tail lamp is lighted both because of the dazzle which is likely to disconcert the driver and because of the drain on the battery. As an alternative to the practice, or rather to eliminate any necessity for it, there has been placed on the market by the Guaranteed Specialties Co., of Newark, N. J., a clever little device which is styled a rear light alarm.

In its simplest aspect, it is nothing more complicated than a small relay which is inserted in the wiring in series with the tail lamp. In operation, when the lamp is extinguished, either because of a faulty or burned out globe or through a broken wire, a loud-sounding buzzer apprises the driver of that fact in no uncertain manner.. In construction the device is rugged and is calculated to withstand almost any kind of use or abuse short of actual mechanical injury. It is set at the factory to operate on a six-volt circuit of not more than 1½ amperes and requires absolutely no attention after installation; it may be placed in any convenient location, though the dashboard is its logical place. The scheme of wiring the device in the circuit, as well as the appearance of the alarm, is shown by the accompanying illustration, which makes plain that no extensive knowledge of things electrical is required properly to fit it on almost any car. It is made of hard rubber, and is waterproof. Complete electric tail lamp outfits, including the alarm, also are supplied and may be attached by almost anyone of average intelligence.



REAR LIGHT ALARM WIRING



VOLCANO PRIMING DEVICE

Brings Out Detachable Limousine Top.

The Sterling Top & Equipment Co., of New York City, has placed on the market a detachable limousine top which is designed for attachment to any runabout or touring car in place of the regulation, collapsible leather top; the article is constructed of wood and aluminum and ranges in price from $250 to about $500. The intention is to supply owners of open cars with this equipment for winter use. Each top is constructed according to the specifications of the body it is to fit and attaches to the same brackets which hold the leather top.

Correct Spreading of Cotter Pins.

Despite other advice on the subject, it is the better part of wisdom to spread the ends of cotter pins as widely as possible, for if they are spread only enough to prevent them falling out of their holes by their own weight there is danger that they may be crowded out by accident. The only reason for not bending the pins any more than can be helped might be one of economy, but it is better to use a pin once and know it is secure than to attempt to use it several times and run the hazard of it falling.

Anderson's Stutz Leaves Braender Trail.

It has been stated to be impossible that two finger prints should be exactly alike, and though it likewise is exceeding improbable that two tire tracks should be exactly alike, it is very probable that not only two but all four of the tire tracks made by Anderson's Stutz in the Elgin race were so nearly alike that the adjective exact may be used without fear of straining its meaning very greatly; for all four of the tires were Braenders. Anderson used Braender tires both front rear, as did Bergdoll, Haupt and Mulford, and he did not, as inadvertently was stated, use Firestones on his front wheels.

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HOW CAN THE MANUFACTURER HELP THE DEALER?

By Being Progressive and Up-to-Date in Little Things, Says Dealer Who Recently Entered the Trade—How Failure to Keep Up With Progress Makes the Dealer's Road a Rough Highway.

When one seeks an opinion on a situation r anything else it is common practice to nake this fountain head of knowledge a nan who has long been in touch with the ituation and is familiar with it through a ong experience and, acting on this theory, Motor World recently printed an expres- ion from C. H. Larson, of New York City, in answer to the question "What can he manufacturer do for the dealer?"

Larson, who is the head of the Cutting-Larson Co., Oldsmobile distributer in the metropolitan district, has been connected with the automobile trade for many years and has been a dealer for seven years, but the views of a newer tradesman are likely to prove fully as enlightening, for the new man sees as an ensemble what the older man has been a part of for years. Among the newer entrants to the trade in the metropolitan territory is Henry Drouet, president of the Drouet & Page Co., of 1890 Broadway, and when he was asked "What can the manufacturer do for the dealer?" he replied, "They're all right in the big things, but they ought to look more to the little things."

Relations of Making and Selling Ends.

In elucidation of his answer, Drouet remarked upon the not too amicable relations which sometimes exist between the manufacturing and selling ends of the business, and pointed out instances of little omissions or acts by the manufacturer which have loomed big for the dealer in that they have meant the loss of sales to him. Anything which blocks a sale for a dealer is a big thing to the dealer and it should be equally as important to the manufacturer, for unless the dealer sells the cars the manufacturer might as well stop making them.

"I speak of general conditions as I see them," said Drouet, "and not of the Palmer & Singer company, whose cars I sell, for I believe our relations represent the exact opposite of the conditions of which I speak. The things I mean are the little details of construction which will help the dealer sell his cars but which are not put on by the manufacturer.

"The reason why some manufacturers adopt this attitude is hard to give, but my opinion is that they are influenced by mechanical men and designers who are not so anxious to please the selling end of the business as they are to have their own way about designing. Some manufacturers are inexcusably slow in keeping up with advanced ideas and in putting on the new things and the little details that make the cars 'take' with the buyers.

Racing Driver's Advice Was Ignored.

"The whole attitude is best summed up in the experience of a racing driver whom I know. This man was engaged to drive a special racing car. He went to the factory to see it and was asked how he liked it. He said, 'It's a pretty good looking car, all except the wheels; I don't want to drive the car with those wheels.' 'What's the matter with the wheels?' snapped the designer; 'they're regular stock wheels.' 'I know that,' replied the driver, 'but you don't think I'm going out on the track with 36-inch wheels, do you? I wouldn't stay right side up ten minutes.' 'You'll drive it as we designed it or not at all,' replied the designer. 'Oh, very well,' was the answer; 'you can take your car and go to hell! But mark my word, the first man who goes out in it will be killed.' And the driver was right; the driver who took it out was killed.

Poor Cover That Lost Dealer Sale.

"That attitude was wrong, but it illustrates the attitude some car builders take in designing their product. You wouldn't think a little thing like a slip cover for a top would kill a sale, would you? But it did We had a woman prospect who had her mind made up to buy one of three cars, an A——, a B——, or ours. Finally it narrowed down to ours and the B——, and she bought ours. After she had signed the contract, out of curiosity I asked her why she bought our car instead of the B——. 'I'll tell you,' she answered. 'When I was down in the B—— salesrooms they had the top down and I saw that the slip cover was nothing but common oilcloth. I knew that the first time I got it wet it wouldn't last a minute, and I thought if that was the kind of a car it was I didn't want it.'

"Now, as a matter of fact, the B—— car is a good car, even if it did have a cheap slip cover, and I don't know whether the dealers ever thought to call the manufacturer's attention to the quality of that particular part of the outfit, but that cover, and that alone, lost a sale for the B—— dealers, and if the man who builds the car maintains that the cover is plenty good enough and that, anyway, he isn't going to change it, he is making a big error.

"The situation is brought about largely by the point of mechanical perfection to which cars have been brought to-day; almost every car is a pretty good car. I can't tell a man that the motor in our car will run away from every other motor on the road or that it will pull three of any other make up a hill or do any such nonsensical thing; it won't. There are superior points about our motor, but people don't come in to-day and ask about the bore and stroke, or how many bearings we have in the crankshaft or any such things as that. They are satisfied when they come in that the car will run satisfactorily and most of them are sold on other points.

Progress in Design and Its Value.

"Beauty of design is an important feature to-day; women are playing a larger part in the buying of cars, and no manufacturer who wants to be up-to-date can afford to neglect the details. Yet how many of them do! Just stand in the door and watch the cars go by. Unsightly radiators, inharmonious body designs, skimpy equipment and many other things which, while not exactly defects, are not sales helps.

"Instead of working to get a good-looking car, many manufacturers follow in the path they have always trodden and seem to think that what was good enough yesterday is good enough to-day. If a dealer says he thinks he could sell the cars more easily if the radiator were made more sightly and the body lines made to look like those of a regular automobile, the manufacturer pays little attention to him. The car sold yesterday, therefore it ought to today. He loses sight of the fact that other manufacurers are sweeping past him in these refinements and that just as fast as they pass him it is making it easier for other dealers to outsell his dealers.

"One 1914 line of cars has a top that I have heard commented upon in several places because of its hideousness and low

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quality. I don't see why the manufacturers ever put it on and I don't suppose they can see any good reason why they should take it off.

"You wouldn't think that clock would sell a car, would you?" asked Drouet, pointing to a little metal clock in the center of a Palmer-Singer dash. "Well, it has," he continued. "With all cars as good as they are to-day, it is little things like that which make talking points. I wanted that clock and several other things put on as a help in selling the cars and the company put them on without a protest. It has more than paid, for we have been able to make sales that otherwise would have come hard and might have been lost entirely. Refinements count.

Little Things That Helped Make Sale.

"One young man came in to look over our line; he didn't seem at all anxious about the mechanical part of the car, and if we had had no other selling points I would have had to hammer away at him on the mechanical line and on construction, comfort and such things, which line of talk, with a few variations, will fit almost any car that is any good at all. But this young fellow was strong for the little things. The dash clock took his eye, and I told him I would put on a cigar lighter if he wanted it. That made a big hit.

"I also told him I would put on a swivel sign-lamp and one or two other things, all of which didn't cost me much but which sold the car. A car equipped like that was what he wanted. So long as the car looked all right and ran all right he would have been satisfied with any make. Many cars are sadly lacking in attention to minor appointments, and I don't see how some Broadway dealers get along. There is nothing particularly attractive about their cars; they are just cars, and that's all. There isn't a thing to make them a bit better than others, or even as good.

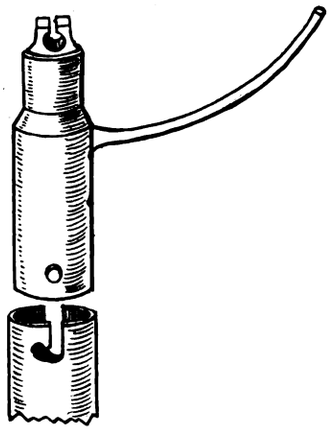
Summary of History of Front Doors.

"You may remember when front doors came out. Some manufacturers hung back and refused to put them on. They couldn't or wouldn't see it. The dealers felt the demand for them and set up a yell for front doors, but still a lot of the manufacturers would not put them on. But would you try to sell a car to-day without front doors? The manufacturers put them on at last—all of them—and why couldn't more of them have been prompt in getting behind the dealer and giving him what his customers wanted?

"The manufacturer would do well to blend his manufacturing attitude more with the sales attitude. The typical manufacturing attitude is 'build and sell what I want,' while the real money and success is in building and selling what the people want. And since the dealer is the sales medium he is quite likely to know what the people want; wherefore, if he conveys to the manufacturer authentic information as to what would make the cars more salable, why shouldn't the manufacturer give some heed? The cars that are going to take are the cars that are kept up-to-date, and unless the manufacturer cooperates with the dealer in that direction some dealers are going to have hard traveling."

Gas Burner for Emergency Use.

Reversing practice current at the time when electric lights first assumed real prominence about a year ago and apparent in the production of numerous devices



EMERGENCY ACETYLENE BURNER

for converting gas lamps into electric lamps, the Acetylene Gas Co., of Milwaukee, Wis., just has placed on the market an acetylene burner designed to be temporarily substituted for electric lamps should anything occur to darken their brilliance.

The device, which is shown by the accompanying illustration, consists of a small pillar constructed to fit the ordinary Ediswan electric lamp socket, where it is held by the usual bayonet lock. The acetylene burner is slightly smaller than usual, to obviate the possibility of damage to reflectors, and the gas pipe line connection is near the top. The burners themselves list for 65 cents, and as they are no larger than an electric light globe they can be carried quite easily with spare globes. Where no acetylene tank is carried, which is the case with a great many modern cars, the smallest size tank, produced for the use of motorcyclists, can be carried in the tool kit for emergency use.

Tip of "$499,995.40" to Taxicab Driver.

Just because a few capitaliists have acquired a good share of the wealth of the country need not prevent anyone from feeling like a millionaire; all that is required, according to the theory of Finley Alexander Washington, of Jersey City, N. J., is a pen and check book. Finley, who is a negro, went for a taxicab ride in New York the other day, and after the meter had climbed as high as $4.60 the chauffeur began to look anxious about the money.

This worried Finley not at all; he pulled out a check book, wrote a check for $500.00 and presented it to the chauffeur with directions to "keep the change." The "change" was an imaginary $499,995.40. When arraigned in the Yorkville police court the negro said that he owned all the automobile factories in the city and had made arrangements for the purchase of all the hotels owned by the Astor estate. He also promised an automobile to each of the court attendants. While waiting for the ambulance which was to take him to Bellevue hospital, Washington was placed in a cell with a man whose bondsman had failed to qualify. Hearing his tale of woe, the negro promptly wrote out a check for $10,000 and generously presented it to his cell mate.

Spends 38 Hours in Jail as Protest.

As a protest against what he termed the injustice of Chicago's headlight ordinance, in that it makes no provision for accidental extinguishing of lights, and against the conduct of the police, John D. Cameron, retail sales manager of the International Harvester Co., spent 38 hours in a cell last week rather than recognize the authority of the police and sign a bail bond. Cameron's tail light went out, he claims, because someone put water in the oil, and a motorcycle policeman arrested him while it was out, although Cameron insists he had relighted it several times. When the case came up in court he was discharged.

Reo Ball Player Applies for Damages.

Because, so he claims, he was ordered by his foreman to don a uniform and play on the Reo team in the factory baseball league in Lansing, Mich., Clifford Vetter, of Grand Lodge, has entered a claim for compensation for a broken wrist; in his application to the Industrial Accident Board he claims he intended going home had he not been ordered out to play. Owing to the fact that he was not regularly employed as a ball player by the Reo Motor Car Co., the outcome of his request for remuneration is in doubt.

To Locate Garage in Yosemite Park.

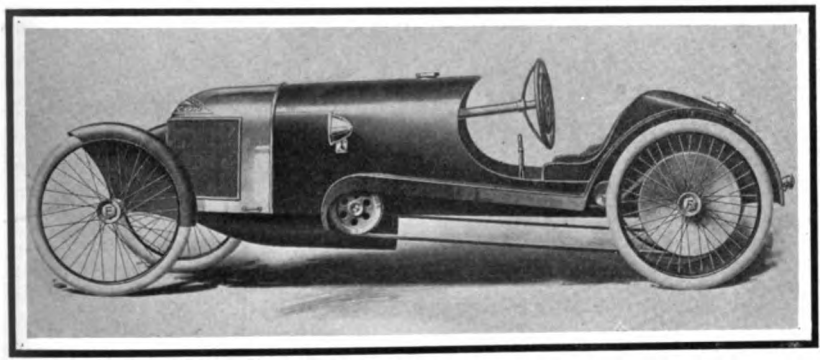
Permission having been granted for the limited entry of automobiles into Yosemite Park, Cal., the Federal government now plans to erect a garage in the national preserve; it is designed to shelter the cars of motorists who wish to visit points of interest by other means of transportation.

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ALCON CYCLECAR EMPLOYS UNUSUAL CONTROL METHOD

[as Friction Change Gear Mechanism Operated by Wheel on Steering Column—Electric Lights and Engine Starter Standard.

Carrying the cyclecar idea probably a lit-e further than it has been carried so far, ıe Falcon Cyclecar Co., which shortly will ? incorporated in Cleveland, O., with $250,-)0 capital by Francis R. Hoyt and others.



FALCON BELT-DRIVEN CYCLECAR SHOWING FRICTION CONTROL

preparing to bring out a light vehicle hich, while belonging properly in the cy-ecar class as defined by the British Royal utomobile Club, still will have such unmis-ıkeable evidence of the full-sized automo-ile as an electric lighting system. For the ıanufacture of the vehicle, which will be yled "Falcon," a factory building in all robability will be erected on East 105th reet in Cleveland.

In external appearance, the Falcon has all ıe material aspects of the typical foreign yclecar. Which is to say, it is quite low nd rakish; has light wire wheels, and is riven by long V-section belts running ver pulleys on a countershaft and on the ear wheels. Also, it has accommodations or only two passengers, and though the eats are arranged side by side, the overall idth of the car is only slightly more than ıree feet; the tread is exactly 36 inches nd the wheelbase is 96 inches. The weight f the car complete, as it is shown by the ccompanying illustration, is 325 pounds.

For power, a two-cylinder air-cooled mo-or set forward behind a grating is used; the iston displacement of the engine is 70 ubic inches and the rated horsepower is 10. rovision for starting the engine from the river's seat, which is placed at the left ide, is made.

One of the distinctive features of the new ar is the unusual arrangement of the speed hanging mechanism. The gear ratio be-ween the engine and the road wheels is al-tered through the intermediary of a fric-tion mechanism not unlike the apparatus already familiar. But instead of the usual hand lever for shifting the position of the driven disk, there is a hand wheel which is placed atop the steering column inside of the steering wheel; its location may be seen quite clearly in the picture. Another un-usual feature is the method of springing the front axle; though the arrangement is not shown in the illustration, it is pointed out by the designer that "the front springs are so designed on a pivotal principle that road shocks are not communicatetd from the wheels to the body."

Wheels are shod with pneumatic tires measuring 28 x 3 inches, and, as is sho vn in the picture, the front mudguards are fas-tened not to the chassis but to the wheels, with which they turn. The fuel capacity of the car is nine gallons and the oil capacity one gallon. The equipment included in the list price, which has been set at $385, in-cludes a tool box, tire repair outfit and a kit of tools.

When Alcohol is Better than "Gas."

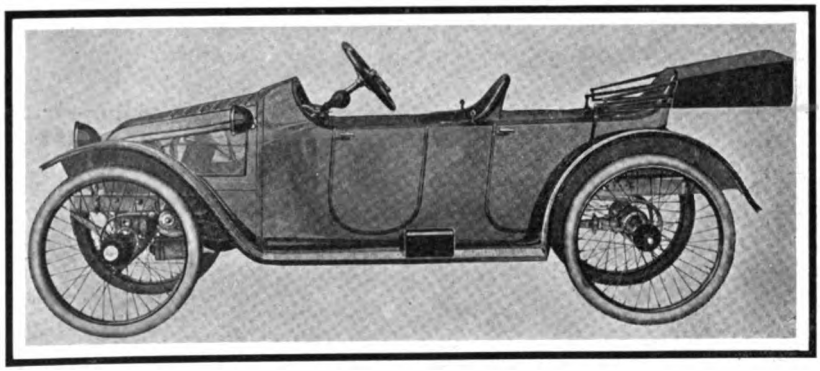
For removing grease spots from leather, it is not a good plan to use gasolene or benzine, for there is danger of removing also some of the coloring matter of the leather. The better plan is to use wood al-cohol—and to use it very sparingly.

MANUFACTURE OF WOODS MOBILETTE NEARS REALITY

Company About to Build Cyclecar of Which Model Was Completed Twenty Months Ago — Has Three-Disk Friction Drive.

Although the Woods Mobilette, which is produced by the Woods Mobilette Co., of Chicago, Ill., and which is one of the latest additions to the swelling ranks of the cycle-car contingent, was conceived as long ago as 1906 and, it is asserted, has existed for the past 20 months as a complete vehicle, arrangements for its production have but just reached the stage where deliveries can be promised in the near future. Specifica-tions which now are available reveal that the little vehicle has a number of interest-ing features all its own.

In the first place, the vehicle is a true cyclecar, at least as far as weight and size are concerned, for it measures only 35 inches in overall width, weighs approxi-mately 450 pounds and the wheelbase is but 89 inches. The seats, which accommodate two persons, are arranged tandem fashion, like the original French Bedelia cyclecar, though unlike that interesting vehicle, the power plant and transmission elements of the Woods Mobilette approach more or less closely to current practice apparent in full-sized automobiles.



SIDE VIEW OF WOODS MOBILETTE SHOWING UNUSUAL SPRING SUSPENSION

It is in the transmission elements and the spring suspension of the car that what novelty there is exists, for in neither case has the designer adopted for his own the whole plans of others. Thus, though power is transmitted from the motor to the rear axle through friction mechanism, it is fric-tion mechanism of a new kind, or rather of new arrangement. At the after end of the engine, and virtually forming the flywheel, there is a heavy bevelled edge disk which drives a similarly beveled disk mounted at right angles to the first. Against the face of

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this second disk there presses a third disk, which is splined to and slides on the propeller shaft.

To obtain the necessary adhesion between the second and third disks, the third is fitted with fiber inserts and the desired speed changes are obtained by simply sliding the third disk along the propeller shaft after its contact with the second friction disk has been disturbed by the depression of the "clutch" pedal. Two pedals are provided for the control of the car, the first simultaneously disengaging the drive and applying rear wheel brakes and the second disengaging the drive only, to facilitate speed changes.

The power plant of the car consists of a two-cylinder four-cycle V-set motor cooled by air and sparked by a magneto The bore and stroke measure 3⅛ inches and 3 inches, respectively, and the rating, according to the A. L. A. M. formula, therefore, is slightly more than 7 horsepower; the piston displacement is 92 cubic inches.

In the spring suspension of the car, the designer has adopted what is probably the simplest system possible, and it is a system that is quite different from anything else designed for the same purpose. The springs, which are best made plain by the accompanying illustration, are merely spirals attached to the chassis frame and partly coiled about the axles. The wheels, which are of wire and are of the type rendered familiar by motorcycle practice, are shod with 28 x 2½-inch tires. Though no definite price has been set for the complete car, it is expected that it will retail for close to $350.

Concerning Pierce-Arrow's New Truck.

Leaving little room for doubt regarding the actual carrying capacity of the new Pierce-Arrow two-ton commercial vehicle, compeer to the five-ton vehicle produced by the Pierce-Arrow Motor Car Co., of Buffalo, N. Y., and to correct misunderstandings, the manufacturers point out that, while the total admissable load on the chassis is 5,200 pounds, this total load must include the weight of both body and paying load. If the body weighs in excess of 1,200 pounds, the paying load will be less than two tons by the amount of the excess; as the average weight of bodies is 1,200 pounds, the permissible average load is exactly two tons, and not 2½ tons as has been stated in one or two instances; there is no guaranteed percentage of overload.

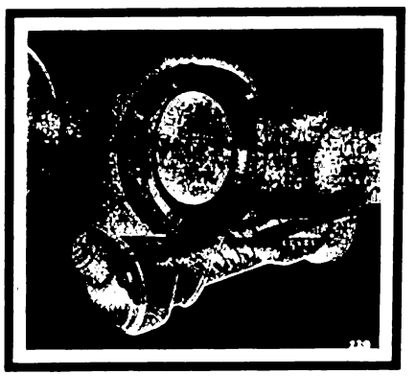
In the braking mechanism of the new vehicle, the designers could find no better model than that used in the five-ton truck and hence, the service or foot brake remains aft the transmission and consists of contracting shoes lined with suitable fabric, and is not, as inadvertently has been stated, a band brake.

UNUSUAL WORM DRIVE FOR DETROIT ELECTRIC CARS

Copious Lubrication Positively Ensured by Mounting of the Worm —Many Detail Refinements Mark New Models.

In electric pleasure vehicles it is quite as important as it is in gasolene vehicles that both design and construction be kept abreast of the times and up to the minute in both theory and practice, and though the Anderson Electric Car Co. of Detroit, Mich., has found a few changes to make in models that always have been well received, the changes are not of a radical nature but rather are deeper down and have to do more with wear than they have with appearance.

Thlus, for instance, though the company



DETROIT WORM MOUNTING

has for the past three years employed worm drive in some of its models and therefore has become quite familiar with its characteristics, construction in the new models has been materially improved by the adoption of a new and more thorough lubrication system for the worm and wheel.

The worm-driven chassis is not the only one that will be produced, however. A bevel-driven chassis will be produced as well, and on it there will be mounted four distinct body styles—a roadster; a five-passenger forward drive car operated from the front seat; a four-passenger single drive car, driven from the rear seat, with a revolving chair in the front right corner; and a luxurious open Victoria. Three body styles, as follows, will be mounted on the worm-driven chassis: a five-passenger duplex drive car which can be operated from either front or rear seat; a four-passenger single drive car with wide, roomy seat for three persons and a revolving chair in the front right corner for the fourth passenger; and a roadster.

Among the more important improvements that have been incorporated in all models is the adoption of larger batteries, which means, of course, that mileage has been increased considerably; all cars now are equipped with larger tires, making for easier riding and reduced upkeep expense; an electric brake operated from the controller handle is standard; Hanlon rain vision front glasses, for which the Anderson company recently acquired the patent rights, are standard; oval crowned fenders now are standard; the equipment has been increased by the addition of a Warner speedometer and a high-grade clock; and a number of detail improvements have been made in upholstery and in the finish of the cars.

The improvement in the worm driving mechanism — it is a Daimler-Lanchester worm, by the way, and is imported especially for the Detroit electric cars—really is the most apparent change in construction and it is a change that is calculated to increase smoothness of action and to reduce wear to a considerable extent. Needless to point out, the worm gearing is absolutely quiet in operation, a point of no mean consideration in an electrtic. By the new mounting, which is illustrated in the accompanying illustration, the worm, which is hung beneath the ring gear, operates in an oil bath and for this reason constant and copious lubrication—an essential feature in any worm gearing—is positively ensured. The worm gear is standard on models 46, 47 and 48; the bevel drive on models 43, 44 and 45.

On the bevel-driven chassis—both chassis are shaft driven, and always have been shaft driven—the four-passenger brougham lists at $2,550; the Victoria at $2,300; the forward drive five-passenger brougham at $2,800. On the worm-driven chassis, the roadster lists at $2,500; the four-passenger brougham at $2,850; the duplex drive five-passenger brougham at $3,000. All these prices are for standard lead battery, $880 being added where Edison battery is specified, except in the case of the model 44 Victoria, when the increase in price for Edison equipment is $664.

Cyclecar Coming from Cincinnati, too.

The De Cross Cy Car Co. is the title of a new company which has been formed in Cincinnati, Ohio, for the manufacture of a cyclecar of that name. Operations are being carried on in a plant at the junction of the C., H. & D. railroad and Gulow street. The De Cross car will mount a two-cylinder air-cooled 9-12 horsepower engine and will be driven by friction transmission, a 1¾-inch belt constituting the final drive. It will have a tread of 36 inches and utilize 28 x 2¾-inch wire wheels. The list price has not been definitely settled, but it will be less than $400.

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What is the biggest mistake dealers make?

We asked this of several experienced dealers and traveling representatives for the *National* cars. We, of course, received various answers—but here is one mistake many agreed upon—

"They make promises they can't keep"

And it is explained that too often the dealer is absolutely sincere and believes he can make good on the promises he gives a customer for the car he sells him.

We have eliminated this mistake absolutely for you when selling *National* cars. In the first place the plain unvarnished truth about the *National* would be a gross exaggeration if applied to other cars. Often we find people who smile when we tell them the truth about the *National's* value. They smile until you prove it—then they do actually smile the smile that brings both a sale and a satisfied customer this year and years hereafter because the *National* is good year after year, steady, consistent, and always at the top in service, power, speed, beauty and most modern equipment.

The *National* dealer does not have to make promises he can't keep in order to force a sale. The *National* dealer promises more than other dealers and keeps his promise because the fulfillment of all the promises he makes is actually in the car he sells.

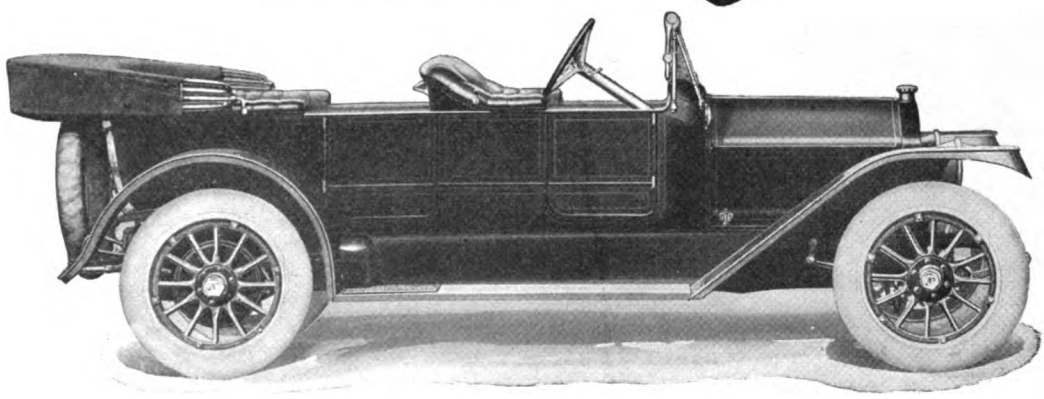
We put it in these cars in our thirteen-year-old factory. The *National's* success in contests—which makes it today the Stock Champion and International 500-mile race record holder—is one proof of the superiority of these cars.

If you are fortunate enough to be in open *National* territory please advise us at once. It will cost you nothing to learn more about our cars and the square and liberal manner in which we co-operate with dealers.

Holds World's Stock Championship

National

Holds World's Record for Fastest 500 Miles in Competition



Five models, $2750 to $3400

National Motor Vehicle Co., Dept. 90, Indianapolis, Ind.

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1,052,782. Starting Device for Explosion-Engines. Arey V. Winegarden, Eldorado, Kan., assignor of one-half to Alvah Shelden, Eldorado, Kans. Filed May 16, 1911. Serial No. 627,584. (Lever starter and clutch mechanism.) 14 claims.

1,052,827. Automobile Starter. Clarence L. Johnston, Berkeley, Cal., assignor, by direct and mesne assignments, to Standard Motor Starter Co., San Francisco, Cal., a corporation of California. Filed June 14, 1911. Serial No. 633,051. (Air starter and fluid pressure clutch mechanism.) 10 claims.

1,052,829. Automobile. Maxim Karminski and Charles Peters, Thompsonville, Conn. Filed Oct. 7, 1910, Serial No. 585,834. Renewed Nov. 26, 1912. Serial No. 733,705. (Motor mounted over and belted to front wheel.) 2 claims.

1,052,873. Protector for Pneumatic Tires. Chas. B. Woodworth, Niagara Falls, N. Y. Filed Aug. 24, 1911. Serial No. 645,807. (Studded tread with hard and soft metal studs.) 3 claims.

1,052,897. Carburetter. James M. Dayton, Torrington, Conn., assignor to Excelsior Needle Co., Torrington, Conn., a corporation of Connecticut. Filed April 9, 1910. Serial No. 554,502. (Carburetter with U-shaped air passage.) 7 claims.

1,052,917. Carburetter. Frank H. Heitger, Indianapolis, Ind. Filed Sept. 29, 1910. Serial No. 584,418. (The Heitger automatic carburetter construction.) 3 claims.

1,053,013. Internal-Combustion Engine. Willliam B. Cowles, Cleveland, Ohio. Filed Dec. 7, 1910. Serial No. 596,157. (Motor with pumping chamber above and tandem with power cylinder.) 19 claims.

1,053,080. Lamp-Trimmer's Wagon. Eddy R. Whitney and Emlen S. Hare, Philadelphia, Pa., assignors to Commercial Truck Company of America, Philadelphia, Pa., a corporation of Pennsylvania. Filed May 2, 1911. Serial No. 624,587. (Lamp-trimmer's tower wagon with controls at top of tower.) 18 claims.

1,053,136. Carburetter. Carl S. Daellenbach, Ellwood City, Pa. Filed Jan. 27, 1912. Serial No. 673,897. (Carburetter with needle-valve direct connected to throttle.) 6 claims.

1,053,141. Rim and Tire for Vehicle Wheels. Jas. A. Cooper, Chattanooga, Tenn., assignor of one-half to D. W. Hughes, Chattanooga, Tenn. Filed Feb. 9, 1911. Serial No. 607,684. (Springs between inner and outer rims.) 1 claim.

1,053,145. Carburetter. Frank H. Ball and Frederick O. Ball, Plainfield, N. J. Filed Oct. 5, 1910. Serial No. 585,400. (Carburetter in which friction between air and passage walls is utilized.) 23 claims.

1,053,164. Magneto-Interrupter. Willard E. Dow, Braintree, Mass. Filed Oct. 18, 1909. Serial No. 523,137. (Rotary interrupter with timing adjustment.) 6 claims.

1,053,166. Spring Wheel. Ernst Henry Fisher, Philadelphia, Pa. Filed Feb. 17, 1912. Serial No. 678,189. (Helical springs, with adjustment, between inner and outer rims.) 1 claim.

1,053,188. Throttle-Controlling Means for Motor Vehicles. Allen Loomis, Detroit, Mich., assignor, by mesne assignments, to Packard Motor Car Co., Detroit, Mich., a corporation of Michigan. Filed Feb. 16, 1909. Serial No. 487,329. (Spring device in throttle control system.) 13 claims.

1,053,195. Starting Device. James McNamee, Amsterdam, N. Y. Filed Nov. 16, 1910. Serial No. 592,723. (Anti-kick crank with friction clutch.) 4 claims.

1,053,200. Automobile Anti-Skidding Device. Robt. A. Moore, New York, N. Y., assignor to The Moore Auto Skid Preventer Co., New York, N. Y., a corporation of New York. Filed Sept. 26, 1911. Serial No. 651,455. (Anti-skid device operated by pedal.) 10 claims.

1,053,202. Speed-Indicator. Wilhelm Morell, Leipzig, Germany. Filed Nov. 18, 1910. Serial No. 593,023. (Centrifugal speedometer with spring fork mechanism.) 3 claims.

1,053,228. Dirigible Automobile Lamp-Bracket. Allen J. Sayville, Richmond, Va. Filed May 10, 1912. Serial No. 696,459. (Headlights operated by movements of steering gear.) 2 claims.

1,053,238. Tire. Geo. A. Stewart and Harlan E. Goodell, Ridley Park, Pa. Filed Jan. 23, 1912. Serial No. 672,845. (Tire with two practically concentric casings.) 2 claims.

1,053,241. Auxiliary Spring or Broken-Spring Repairer. Chester Taylor, Paso Robles, Cal. Filed Sept. 7, 1912. Serial No. 719,102. (Miniature leaf spring to clamp to broken leaf spring.) 1 claim.

1,053,248. Interrupter for Magneto-Electric Igniters. Gustav Unterberg, Frankfort-on-the-Main, Germany. Filed Sept. 26, 1910. Serial No. 583,932. (Cam and lever interrupter mechanism.) 3 claims.

1,053,269. Radiator. Kinderman M. Boblett, Toledo, Ohio. Filed July 12, 1911. Serial No. 638,057. (Cellular radiator formed of sheet metal corrugated strips.) 6 claims.

1,053,329. Traction-Engine. Daniel T. Timberlake, Baileyville, Kan. Filed July 6, 1909. Serial No. 506,032. (Driving system for tractor having two swivel-jointed trucks.) 2 claims.

1,053,332. Vehicle Wheel. Allen R. Weaver, Batesville, Ark. Filed Feb. 17, 1910. Serial No. 544,386. (Wheel with concentric rims separated by air cushions.) 5 claims.

1,053,346. Wheel Rim for Pneumatic Tires. Erle K. Baker, Chicago, Ill., assignor, by direct and mesne assignments, to Universal Rim Co., Chicago, Ill., a corporation of Illinois. Filed Oct. 21, 1905. Serial No. 283,797. (Quick detachable rim and fastenings.) 2 claims.

1,053,347. Wheel Rim for Pneumatic Tires. Erle K. Baker, Chicago, Ill., assignor, by direct and mesne assignments to Universal Rim Co., a corporation of Illinois. Filed July 27, 1906. Serial No. 328,051. (Quick-detachable rim and fastenings.) 3 claims.

1,053,360. Starting Means for Internal-Combustion Engines. Clyde J. Coleman, Rockaway, N. J., assignor to Conrad Hubert, New York, N. Y. Filed Oct. 7, 1903. Serial No. 176,165. Renewed July 20, 1912. Serial No. 710,694. (Intake valve for ignition starter.) 11 claims.

1,053,402. Spring-Wheel. Edgar B. Keemer, Washington, D. C. Filed May 18, 1912. Serial No. 698,199. (Small cross springs in tire.) 5 claims.

1,053,470. Electric Spark Plug. Frank R. Blake, Malden, Mass., assignor to Blake Spark Plug Co., Boston, Mass., a corporation of Massachusetts. Filed Jan. 24, 1912. Serial No. 673,049. (Spark plug with bayonet joint between outer and inner parts.) 2 claims.

1,053,504. Anti-Skidding Device for Tires. Michael C. Harris, Philadelphia, Pa. Filed May 22, 1912. Serial No. 698,949. (Cross-bar non-skids and fastenings.) 1 claim.

1,053,574. Cylinder Lubrication. Jay C. Cook and Clarence E. Welever, Pasadena, Cal. Filed March 18, 1911. Serial No. 615,432. (Oil pump consisting of expanding and contracting ring in piston groove.) 1 claim.

1,053,636. Vehicle Wheel. Charles J. Ohlsson, New York, N. Y. Filed July 8, 1911. Serial No. 637,450. (Wheel with springs between inner and outer rims.) 4 claims.

1,053,700. Internal Combustion Engine. Cecil M. Billings, Newark, N. J., assignor of one-half to John G. Reichstetter, Newark, N. J. Filed July 13, 1911. Serial No. 638,238. (Motor with two-diameter piston and separate gas chamber.) 9 claims.

1,053,707. Spring Tire for Vehicle Wheels. Samuel J. Casey, Keeseville, N. Y. Filed April 5, 1912. Serial No. 688,606. (Tire with both radial and circumferential springs.) 4 claims.

1,053,723. Resilient Wheel. Carroll D. Galvin, Merchantville, N. J. Filed July 23, 1912. Serial No. 709,119. (Cushioning tire between inner and outer rims.) 15 claims.

1,053,727. Differential-Gear Mechanism. Howard C. Hart, Russiaville, Ind. Filed March 8, 1911. Serial No. 613,089. (Ratchet clutch drive.) 1 claim.

1,053,759. Internal-Combustion Engine. Willard Irving Twombley, New York, N. Y., assignor to Twombly Motors Co., New York, N. Y., a corporation of New York. Filed Sept. 12, 1910. Serial No. 581,633. (Opposed cylinder motor with opposite pistons rigidly connected.) 19 claims.

1,053,778. Wheel. Gustave Louis Bourquin, Sellersville, Pa., assignor of one-half to Rudolph Loeb, Camden, N. J. Filed March 11, 1911. Serial No. 613,691. (Springs between inner and outer rims.) 3 claims.

1,053,790. Piston for Explosive-Engines. Frank W. Derby and Herman Kaiser, Oakland, Cal. Filed May 11, 1912. Serial No. 696,656. (Expanding piston taking up wear automatically.) 8 claims.

1,053,800. Starting Mechanism for Internal-Combustion Engines. Adolph F. Feller, Berkeley, Cal., assignor of one-fourth to H. C. Hansen and one-fourth to E. J. Broberg, Oakland, Cal. Filed Aug. 29, 1910. Serial No. 579,562. (Fluid pressure starting system and gearing.) 23 claims.

1,053,821. Resilient Tire. Robert L. Jenkins, Richmond, Va., assignor of one-fourth to Lee B. Hancock, Richmond, Va. Filed Sept. 22, 1910. Serial No. 583,223. (Springs between inner and outer rims.) 1 claim.

1,053,824. Vehicle Frame. George Hill Jones, Aldan, Pa. Filed March 17, 1910. Serial No. 549,895. (Sheet metal frame forming part of body.) 6 claims.

1,053,832. Movable Headlight Support. Ned Gensemer Krimmel, Pine Grove, Pa. Filed April 16, 1912. Serial No. 691,253. (Headlights moved by movements of steering gear.) 2 claims.

1,053,847. Tread-Band for Pneumatic-Tire Wheels. James McLeod, St. Kilda, Victoria, Australia. Filed March 15, 1911. Serial No. 614,602. (Grooved metal tire protector.) 2 claims.

1,053,889. Vehicle-Wheel. Joseph Frank Starbuck, Philadelphia, Pa. Filed April 24, 1912. Serial No. 692,907. (Wheel with curved spokes of flat spring steel.) 6 claims.

1,053,938. Guiding Apparatus for Automobile Lamps. George L. Berg, Seattle, Wash. Filed Jan. 22, 1912. Serial No. 672,631. (Lamps connected to and moving with steering gear.) 1 claim.

1,053,939. Engine-Oiler. Charles E. Brooks, St. Louis, Mo., assignor to Brooks-Latta Automobile Mfg. Co., St. Louis, Mo., a corporation of Missouri. Filed May 13, 1912. Serial No. 696,939. (Oil distributing system for two-cycle motor.) 5 claims.

1,053,995. Tail-Lamp for Motor-Vehicles. Russell Huff, Detroit, Mich., assignor to Packard Motor Car Co., Detroit, Mich., a corporation of Michigan. Filed May 17, 1910. Serial No. 561,906. (Tail lamp set in hole in mudguard.) 3 claims.

1,054,057. Spring-Governor for Vehicles. Walter E. Trufant, Whitman, Mass., assignor to Hartford Suspension Co., New York, N. Y., a corporation of New York. Filed Dec. 8, 1906. Serial No. 346,865. (Telescoping shock-absorber.) 13 claims.

1,054,080. Method of Combining Air and Gas and Utilizing the Same in an Internal-Combustion Engine. Gustav A. Bachman, Baltimore, Md. Filed Feb. 24, 1911. Serial No. 610,461. (Forced injection of compressed air on compression stroke.) 2 claims.

1,054,104. Motor Road-Vehicle. Guido Fornaca, Turin, Italy, assignor, by mesne assignments, to F. I. A. T., Poughkeepsie, N. Y., a corporation of New York. Filed Nov. 20, 1907. Serial No. 402,984. (Rear axle casing and torque tube formed of two sheet steel parts flanged for joining in a horizontal line.) 8 claims.

1,054,157. Four-Cycle Engine. Nathaniel B. Wales, Braintree, Mass., assignor to Guy B. Collier, Kinderhook, N. Y. Filed March 2, 1907, Serial No. 360,259. Renewed Oct. 24, 1911. Serial No. 656,526. (Motor with hollow piston valve.) 3 claims.

1,054,162. Vehicle Lamp. Joseph E. Allen, Chicago, Ill., assignor to Dearborn Hardware Mfg. Co., Chicago, Ill., a corporation of Illinois. Filed Dec. 1, 1911. Serial No. 663,392. (Bulb socket for electric headlight.) 2 claims.

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A Continued Story
Chapter 5

Concluded
Next Issue

!XX—? !!—DXXXQ ?? !XX!

There goes that fool Jones, giving me the laugh—and, good lord, there comes Smith!

Watch me pretend to be looking at my tires.

Wouldn't let those idiots know I've been cranking this old scow the last half hour—they both have those new-fangled electric crankers.

Gosh—wait 'till I get hold of the smart agent that sold me this hand cranker—I won't do a thing to that guy.

LBA

Storage Battery

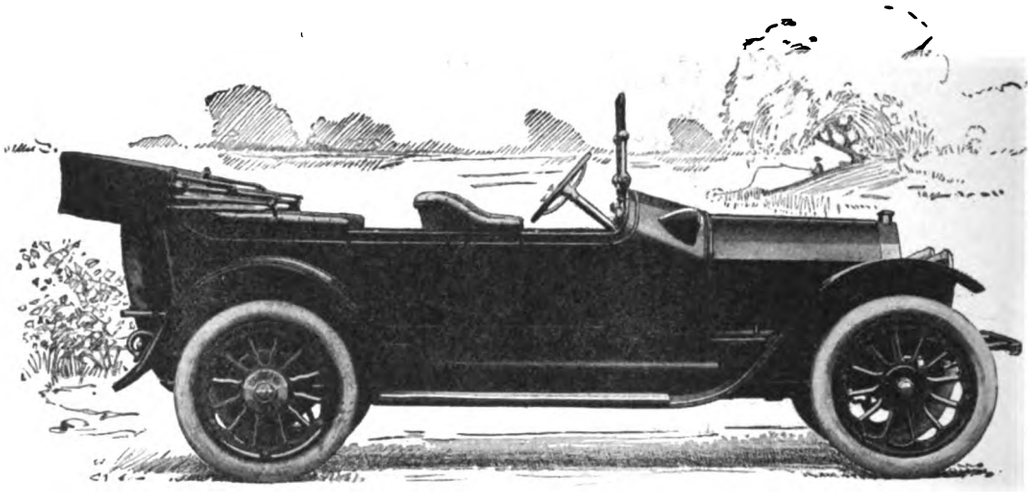
Write us for full information

Willard Storage Battery Company, Cleveland, Ohio

New York Branch—136 West 52nd Street
San Francisco Branch—243 Monadnock Bldg.
Chicago Branch—2241 Michigan Avenue
Detroit Branch—1191 Woodward Avenue
Indianapolis Branch—438 and 439 Indiana Pythian Bldg.

Depots in All Principal Cities in the United States, Canada and Mexico

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PATHFINDER TOURING CAR
40 horse power *120 inch wheelbase*

You can have the same success we are having with the Pathfinder

¶ Announcements are always interesting. Maybe they will open to you a chance to make a more profitable connection. They will surely give you a line on your competition.

¶ The Pathfinder announcements are awakening more interest because it is generally conceded that it is a beautiful car, and that the mechanical construction represents the best in European and American engineering.

¶ Possibly you do not care particularly about car construction and your interest lies in the jingle of hard dollars rather than in the hum of a motor.

¶ Times have changed in the auto game, and you must sell a good car to make money. It follows naturally that the most money will follow the best car.

¶ The Pathfinder is that car. Proof?—Our sales last period increased 117% over the same period in 1912, the largest increase of any established car.

¶ The Pathfinder will make you money permanently. It is one of the four best money makers in the market today.

¶ Don't delay, but start right in your 1914 business by working with us.



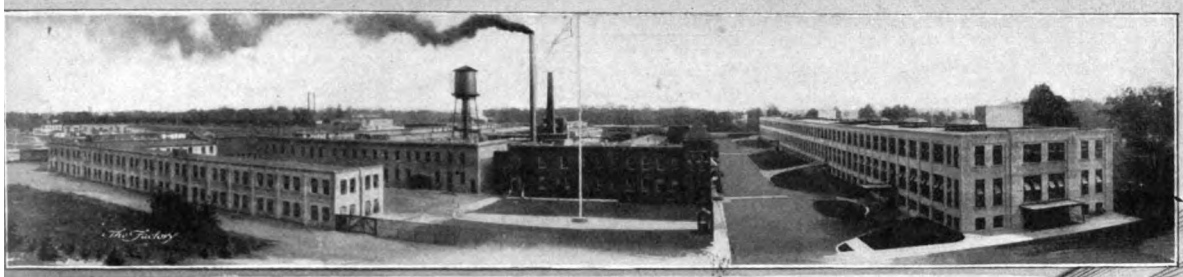
¶ Write us what territory you can cover and we will submit a plan whereby you can make a similar increase in your business. Our scientific selling plan combines the "101 Reasons" and will show you the way to unexpected profits.

THE MOTOR CAR MFG. CO.

1138 Division Street Indianapolis, U. S. A.

Write your name on the margin and get **1914** Pathfinder literature

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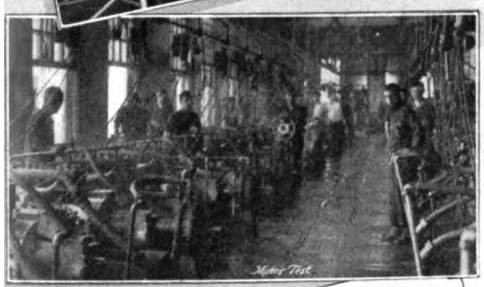


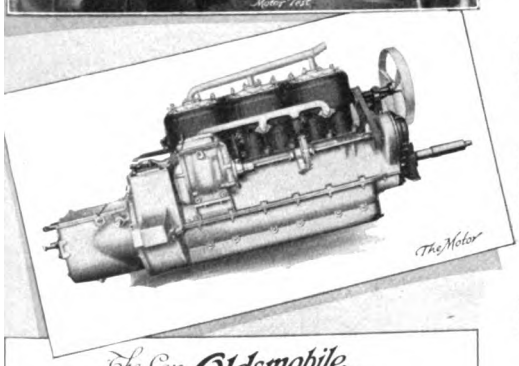
Established 1880 Incorporated 1899

OLDS MOTOR WORKS

Lansing, Michigan.

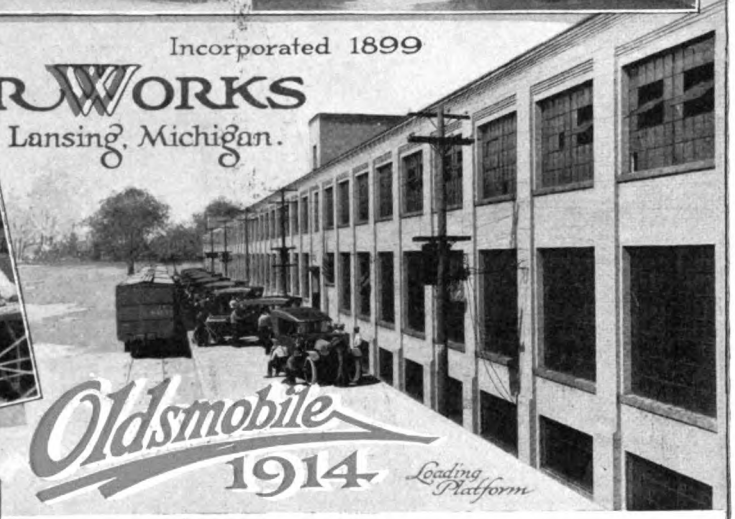








Four- or Five-Passenger Phaeton, Touring Body Type, $2975. Seven-Passenger Touring Body, $175 Extra. Limousine, $4300



$2975 For a Six Cylinder OLDSMOBILE $2975

Lower in price, and even higher in quality than any of its predecessors—the Model 54—1914 Oldsmobile is creating more concrete evidence of live dealers interest than any other high grade six on the market.

The Price

$2975 practically eliminates competition with dealers handling cars priced from $4000 to $5000—for the Oldsmobile is as good as any of these. The lines of this car are of distinctive Oldsmobile design—a standard which has led all competition, whatever the price.

We Are Six Cylinder Pioneers

Oldsmobile pioneered the six cylinder motor, and it is unnecessary to dwell on the value of the years of ripe experience in the manufacture of six cylinder cars—which is back of Model 54. The Oldsmobile unit power plant 3 point suspensions (bore 4¼, stroke 5¼) is a wonderful piece of machinery. In performance and appearance it meets every and all requirements, and astonishes the experienced motorist with its marvelous flexibility and power. Words cannot adequately portray its many good qualifications.

Matters of Comfort, Utility and Refinement

We learned how to build comfort into the Oldsmobile in the early days of the industry. If we knew of any better equipment or little matters of refinement than are on the Model 54 we would be the first to install them: But we have put everything into this car that spells utility, comfort and refin ment.

Prompt Deliveries

Never in the history of this Company have we been so well prepared to take care of our dealers by prompt shipment of cars as ordered. We began the delivery of our new models August first, and each day sees the regular quota of cars coming through the factory, tested and inspected down to the minutest d tail, on schedule time. You can absolutely count on all delivery promises being adhered to rigorously.

Write Us at Once

In a short while, orders for all cars available for the coming season wi l be closed, and we shall be unable to go beyond this point. We urge, therefore, that if you wish to sell a car that measures up to the highest standards of quality, workmanship and design, you write us at once, letting us know your prospects, size of territory desired, and your facilities for properly representing the Oldsmobile line.

OLDS MOTOR WORKS **Lansing, Michigan**

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To Dealers and Garage Men

This book is for you, particularly—full of practical suggestions on the proper methods of removing and replacing ball bearings, cleansing, lubricating, inclosure, maintainance, etc., etc., prepared by our engineers. It is a *real* manual and is worth real money to you. We will send it free if you address your request to

Department F

THE NEW DEPARTURE MANUFACTURING CO., Bristol, Conn.

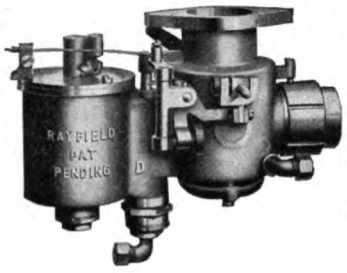
Western Branch: 1016-17 Ford Building, Detroit, Michigan.

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RAYFIELD CARBURETORS

are Most Economical

in All Kinds of Weather
With All Makes of Cars
Using All Grades of Gasoline



Every Rayfield user knows that economy is one of the cardinal features of Rayfield carburetion, whether touring, hill climbing, racing or driving on the boulevard.

This carburetor, in the most recent economy tests for heavy, high-powered six-cylinder cars, established the world's record.

Many an owner of a car that was eating up gasoline and returning six, seven or at most eight miles per gallon, has installed a Rayfield and found his mileage increased and his operating expense reduced.

The average car owner wants power and speed, of course. These the Rayfield give him in greater measure than any other carburetor.

We are not content to give you power, speed and flexibility at the sacrifice of economy, but give you all of them.

All of which will be confirmed by any Rayfield user you happen to know or meet.

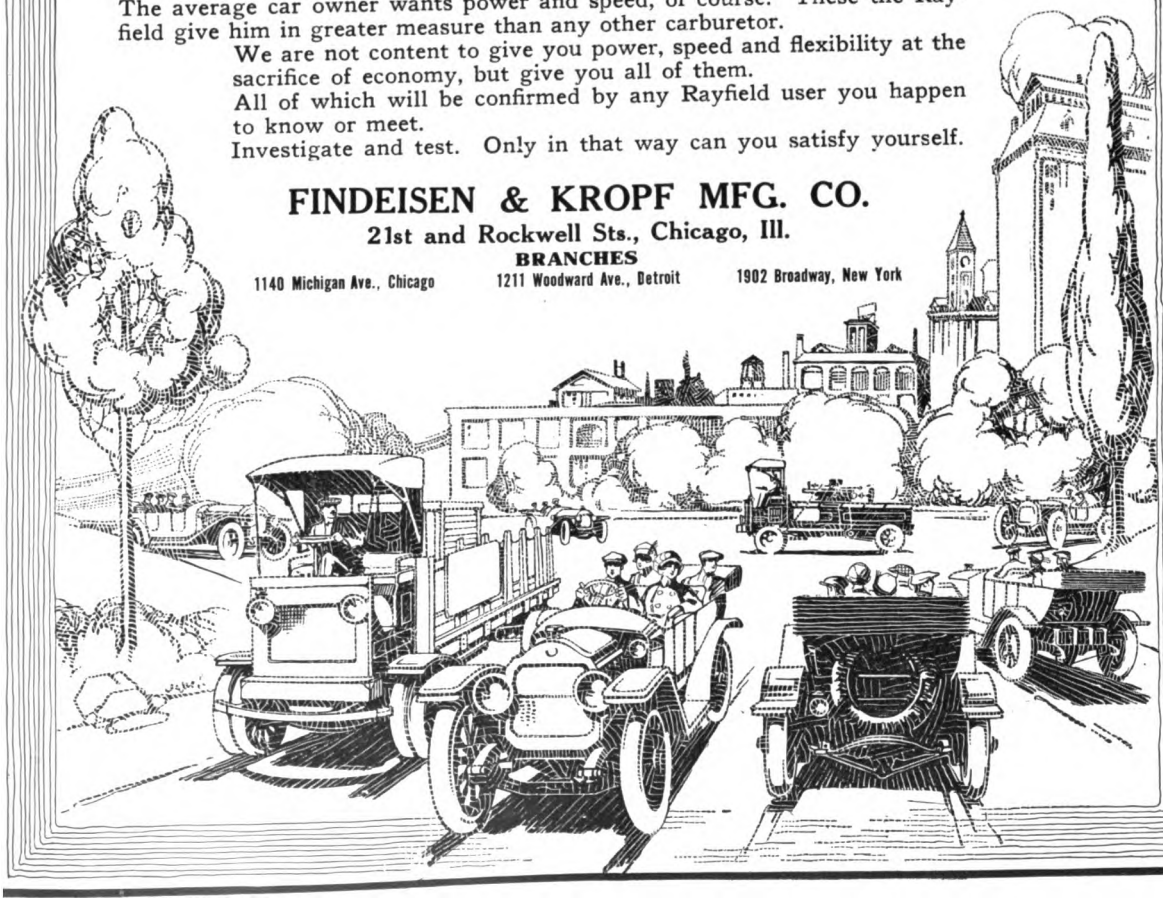
Investigate and test. Only in that way can you satisfy yourself.

FINDEISEN & KROPF MFG. CO.

21st and Rockwell Sts., Chicago, Ill.

BRANCHES

1140 Michigan Ave., Chicago 1211 Woodward Ave., Detroit 1902 Broadway, New York



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Commercial Gasoline

More carburetor trouble is traceable directly to foreign substances in the fuel than to the inability of the carburetor to vaporize the gasoline properly.



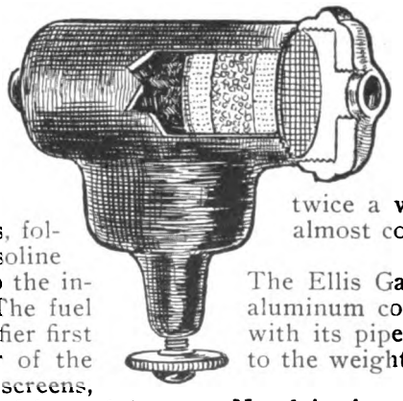
The remedy for carburetor trouble should be applied to the cause of the trouble. Remove the foreign substances from the fuel and carburetor troubles will cease.

Commercial gasoline, either high or low test, invariably contains more or less foreign matter, such as fine particles of dirt, parafine, sediment. Water collects and its presence is bound to cause trouble which ends in a "hang-up."

Probably no trouble is so dreaded by drivers as carburetor trouble. Carburetors come from the factory perfectly adjusted and even the most experienced driver hesitates to change the adjustment.

Their hesitation is natural and wise. The carburetor should do its work of vaporizing the fuel properly and when it balks, something is wrong. Invariably it is the fuel, not the carburetor which is at fault.

The Ellis Gasoline Purifier removes the cause of carburetor trouble and gives the carburetor a chance to do its work. It is more than a strainer; it filters and purifies gasoline without interfering with its free flow.



How best to understand the Ellis, follow in your mind the flow of gasoline from the tank through its pipe to the intake (left end in illustration). The fuel fills the lower portion of the Purifier first and as it rises into the cylinder of the purifier filters through a series of screens, first wire, then fine felt, quartz, felt, and last wire. Every particle of sediment, however fine, is removed, leaving nothing but pure gasoline to feed on to the carburetor.

We said that water caused a lot of carburetor trouble. This undesirable element is removed by gravity. It is caught in the lower chamber of the Purifier, and—owing to the greater specific gravity of water—the fuel rises over the water. Long before the precipitation chamber fills up with water and sediment it is drained off simply by loosening the thumb screw at the bottom of the Purifier. Once or twice a week is often enough, even with almost continual running.

The Ellis Gasoline Purifier is made either of aluminum composition or brass and complete with its pipe unions adds practically nothing to the weight of the machine.

No claim is made as to its saving in fuel costs for that is not its primary purpose.. While everybody knows that pure gasoline will develop more power than otherwise, *the great benefit of the Ellis Gasoline Purifier is found in its insurance against carburetor troubles and their recurrent expense.*

Write for booklet, information, prices and discounts to dealers.

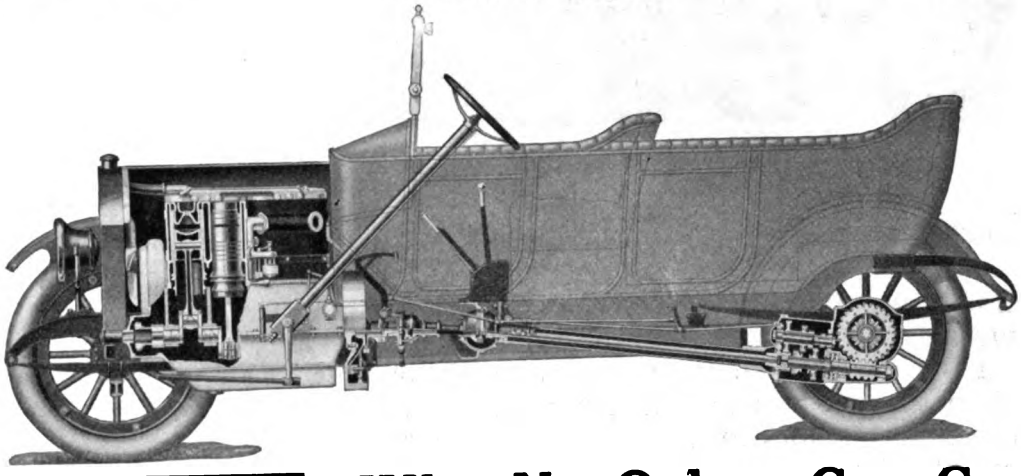
THE NATIONAL SALES COMPANY, 45 Milk Street BOSTON, MASS.

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Five-Passenger Touring Car $2900

Lyons-Knight

"THE CAR OF SILENCE"



Specifications

Engine—Lyons-Knight, four cylinder, four cycle, 4½ inch bore, 5½ inch stroke, water cooled.
Horse Power—50.
Oiling—Lyons-Knight pressure feed to all bearings, pistons and sleeves, regulated in accordance to engine power.
Carburetor — Improved double jet, especially designed, with adjustment on steering column.
Ignition—Dual, water-proof, high-tension magneto.
Clutch—Three plate, Raybestos faced.
Transmission—Silent, selective, three-speed, sliding gear type embodied in rear axle housing.
Driving Gear — Worm drive, silent, smooth and always efficient in operation.
Rear Axle — Full floating, Timken bearings.
Brakes—Two sets, double acting, internal and external on 16" rear wheel drums.
Wheel Base — 130 inches, tread 56 inches.
Wheels—Wood with quick detachable, demountable rims and 37 x 5 inch tires front and rear. Wire wheels special.
Gasoline Tank—22 gallon capacity on upper part of dash over toe board, giving gravity feed direct to carburetor.
Drive—Left hand drive with center control.
Equipment — Electric starting and lighting, with dash lamp and two-tone electric horn, patent one-man pantasote top with drop side curtains, special windshield with ventilator, dust cover, speedometer and clock, combination tire holder and trunk rack, two extra demountable rims, coat and foot rails, cocoa matting in tonneau and complete tool and tire outfit.
Prices—Five Passenger Touring Car, $2900. Seven Passenger Touring Car, $2980. Sedan Type, $3900. Berline Type, $4300; f. o.b. factory Indianapolis, Indiana.

Why No Other Car Can Be Compared To The Lyons-Knight

First—bear in mind this Lyons-Knight is a car of distinctive features—with Knight engine, worm drive and many other new and individual points—

Made in a great factory covering sixty-five acres with its own foundries, machine shops, drop forge and die cast plants, with six miles of its own railroad tracks within the factory itself—

Backed by unlimited capital to produce an unequaled car.

Guaranteed Better

We guarantee this Lyons-Knight engine, with its improved automatic force-feed oiling, new sleeve design and other features, to surpass the performance of any poppet-valve engine made of equal size—to surpass the performance of many six-cylinder poppet-valve engines of larger size.

The Lyons-Knight Worm Drive brings to this big 130 inch wheelbase car — a new and delightful freedom from the noise and grind of bevel gears. It delivers a greater per cent. of power—grows better and smoother with use.

"The Car of Silence"

really sounds a new slogan in the automobile world. A ride in the Lyons-Knight is different — as one man said, "It spoils the enjoyment of any other car." Its silent, smooth, efficient operation brings a new delight to motoring.

The Dealer Knows

the advantage of selling a car that is not in any other class.

The Lyons-Knight is so much lower priced than other high-class cars that there is no comparison.

It is so far in advance of any other car of its price that comparison is avoided.

It is in a class by itself. It cannot be compared to any car because it brings a new idea to the world of motoring.

That is why wise, far-seeing dealers are writing for information, coming to the factory and securing territory on the "Lyons-Knight."

There are definite reasons why you should learn all the facts quickly.

Get the Particulars

You may question these assertions. Ask us to send you the Lyons-Knight advance Catalog and the "Proofs of the Lyons-Knight."

We are willing to put the case up to a one man jury—you.

Act.

THE LYONS-ATLAS COMPANY

Indianapolis, Indiana

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COX OXYGEN CARBON CLEANER

A Money-maker for your Garage — Prompt Service to Customers

THE Picture shows a Cox Oxygen Carbon Cleaner at work. Compared with the old, obsolete method of cleaning cylinders, the Cox Oxygen Carbon Cleaner does its work in a thorough manner, in about one-tenth of the time and returns to you a big profit on this branch of your work, besides doing its work in a way that does not tie up the car and deprive the owner of its use for more than an hour at the most.

A Thorough Job

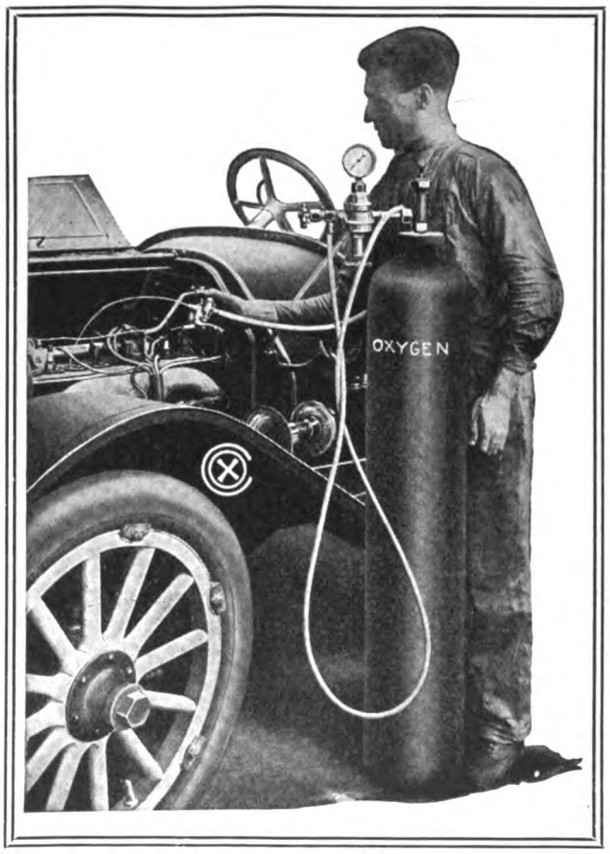
The Cox Oxygen Carbon Cleaner burns off and consumes every particle of carbon deposited in a cylinder, even in the most remote corners, in from six to ten minutes. The device is absolutely safe to handle and can not cause the slighest damage to the motor.

Costs

The outfit costs $25 complete. You are not charged for the Oxygen tank—it is loaned to you. In each tank there is sufficient oxygen to clean from 35 to 40 cylinders. Refilling a tank cost $2.00 and this is the only expense after you have purchased the device.

Its Earning Power

Since the creation of the automobile no device has ever been offered to the dealer or garageman which will return such handsome profits to him as the Cox Oxygen Carbon Cleaner.



The usual price charged for cleaning a motor is $1.00 per cylinder. Sit down and figure this out. Outfit costs $25 and lasts a lifetime. Tanks cost $2 each. $15 per week man does the work. Time required to clean a cylinder, from six to ten minutes.

Other Benefits

Can be moved around any place in the garage. It is not necessary to remove cylinders, simply remove spark plug. The job is thorough and does not depend upon the workman's patience as does the old way of scraping the cylinders. You pay for the apparatus in a day or two and it immediately begins making a substantial profit. You make better satisfied customers. Can you afford to overlook this proposition.

Write for further particulars. Don't let your neighbor in business get the jump on you

COX BRASS MFG. CO. — **Albany, N. Y.**

1777 Broadway
NEW YORK CITY

870 Woodward Avenue
DETROIT, MICH.

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Stewart Hub Odometer



The True Gauge of a Motor Truck's Worth

A MOTOR TRUCK succeeds or fails according to the ***cost per ton mile.*** The Stewart Hub Odometer supplies the last link in the data necessary to figure the cost per ton mile. You already know the total cost and the weight of the load. You've got to know the distance traveled. The Stewart gives it to you ***correctly.***

An instrument that is not always correct is worse than none at all. It misleads. In order to be sure whether your truck is earning or losing, and how much, you must be ***certain*** of your mileage.

The Stewart Hub Odometer cannot make a mistake. It is positive gear driven and cannot go wrong. There are no doubtful springs, pawls and ratchets. There is nothing that can fail.

When your figures taken from the Stewart Hub Odometer show too high a ton mile cost, you know there is something wrong about the operation of your truck. The danger gong has sounded. You can look for the trouble and set it right. Without this warning you may be losing money that a little investigation would save.

The Stewart Hub Odometer registers to 100,000 miles and tenths. It can be connected to a truck of any make and will outlast the truck. It retains its precision for life.

Whether you buy a ***gasoline*** truck or an ***electric,*** it will pay you to gauge its worth right from the start with a Stewart Hub Odometer.

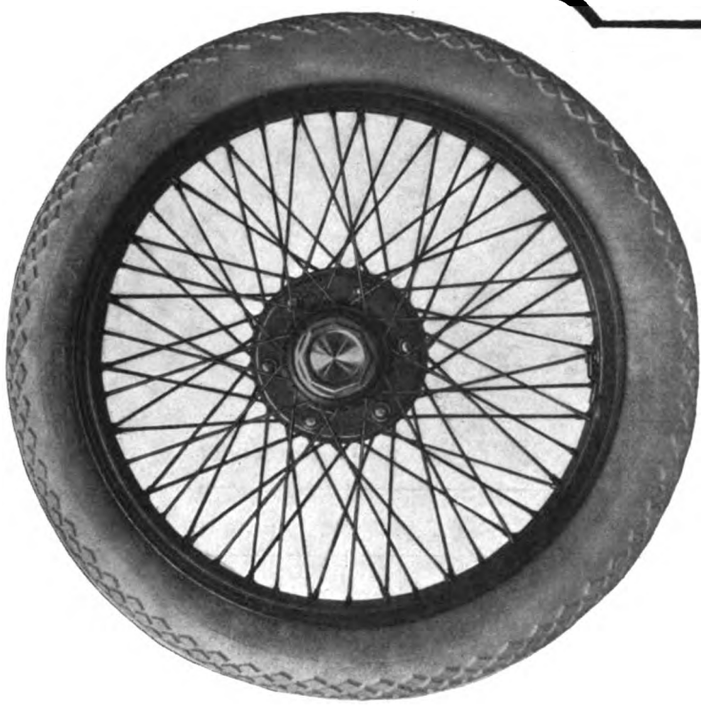
The Stewart Speedometer Factory

1949 Diversey Boulevard

CHICAGO, ILLINOIS

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SAFETY

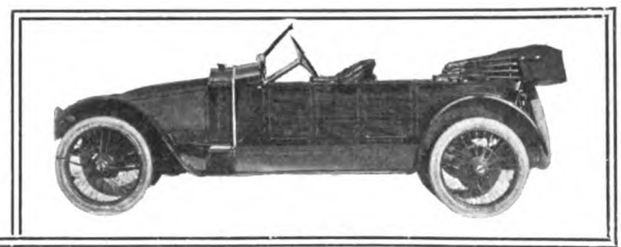


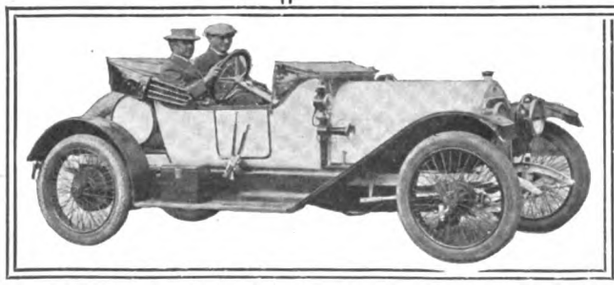
Compared with the millions of people who ride in motor cars, the number of those who sustain accidents from this mode of travel is a very small percentage. A certain percentage of accidents is inevitable but it is so small that the most pessimistic person alive does not think for a moment that motor cars, as they are built today, are unsafe.

But if there is a single stone left unturned to minimize the percentage of accidents, every manufacturer will, sooner or later, make the necessary refinement in his cars. The refinement we point to is the replacement of wooden wheels by steel wire wheels.

Possibly the most likely illustration of this point is found in the way railway companies have developed their trains from the wooden passenger car to "all steel" passenger coaches and Pullmans in order to get SAFETY FIRST with comparatively greater speed and comfort. A striking illustration of the inadequacy of the obsolete wooden passenger cars has been forced upon us repeatedly within the last three or four months. On the other hand, many of our foremost railways operate their limited trains at terrific speed, while none question the safety of traveling in their all-steel trains.

The Final Step in All-Metal Construction





THE McCUE
Buffalo

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FIRST!

We hardly ever think of safety without it bringing to our minds the closely related thought of strength—strength to provide safety.

By tests, capable of exact determination, wire wheels have proven that they possess from five to seven times the carrying strength of wooden wheels. Observation of wire wheels in everyday usage has convinced engineers and other motor car experts of the practical value of the truths deduced from such tests.

Another and even greater result has been found both by tests and by use, that wire wheels have as high as fifteen times the strength of wooden wheels to resist side thrust. In the French Grand Prix Race at Amiens, this year a wire wheel equipped car, colliding with an embankment, turned completely over landing upon its side. The driver and his mechanician righted the car, changing one rear wheel because of a torn tire (the wheel was not bent, even slightly), whereas the front wheel, which sustained an even greater blow, but whose tire was unhurt, was left on and the car continued in the race.

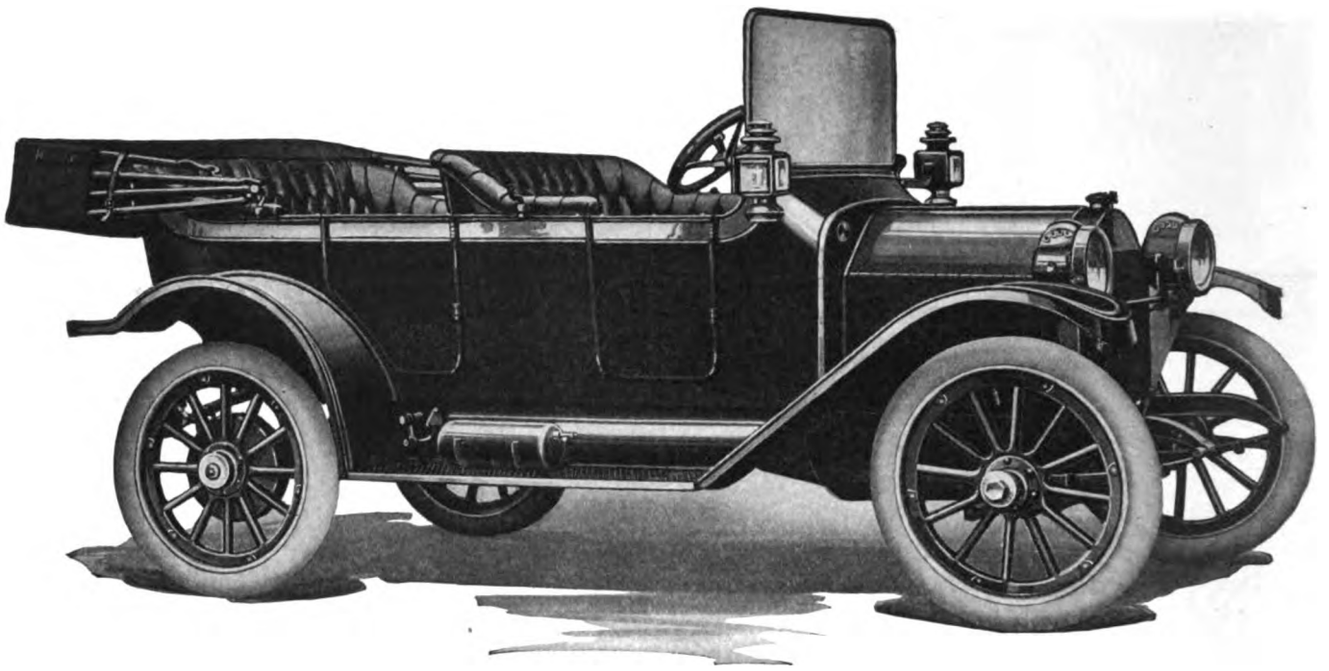
A full test of the strength of wire wheels hardly ever would occur in everyday motoring, but the performance of wire wheels under the most gruelling tests give good indication of the service that reasonably can be expected of them under ordinary conditions.

A rainy day and slippery pavements is an ordinary occurrence and present conditions under which skidding is sometimes unavoidable. A car, skidding into the curb, would have to strike it with a blow considerably harder than would collapse a wooden wheel to even bend a wire wheel. Under the worst kind of skidding the wire wheel, though bent, still would enable the car to limp home or to the nearest repair station. With the wire wheel, all that can come is a small bill for straightening; with a wooden wheel a complete replacement. The collapse of a wheel may cause excessive damage to the other mechanism of the car.

Investigation will remove all doubt as to the strength, and consequent safety of wire wheels. Many of our announcements have pointed out the economy of wire wheels on tires. It is at least a 50% saving. While such a saving is a sordid virtue when compared with the safety of wire wheels, this very tire economy adds to the already overwhelming factor of safety in favor of wire wheels.

COMPANY
New York

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$900

Detroiter

A Smashing Value

Made the Selling Record of the Year in Its Class; Will Better It in 1914

More Attractive Than Ever for Dealers

We believe it is good policy to pass our success around. Accordingly we are making even a better proposition to our dealers than ever before.

Next season the Detroiter will have everything you have been looking for — price, beauty, equipment - it will continue to lead.

We have never had a traveling salesman; we have never needed traveling mechanics. That money goes into the car.

It may take quick action on your part to get territory, for this car that, out of 192 makes, has jumped to eleventh place in point of sales within two seasons.

But we'll do our share, now and hereafter, if you are out wholeheartedly for a good car.

Meanwhile, ***get our proposition by return mail.***

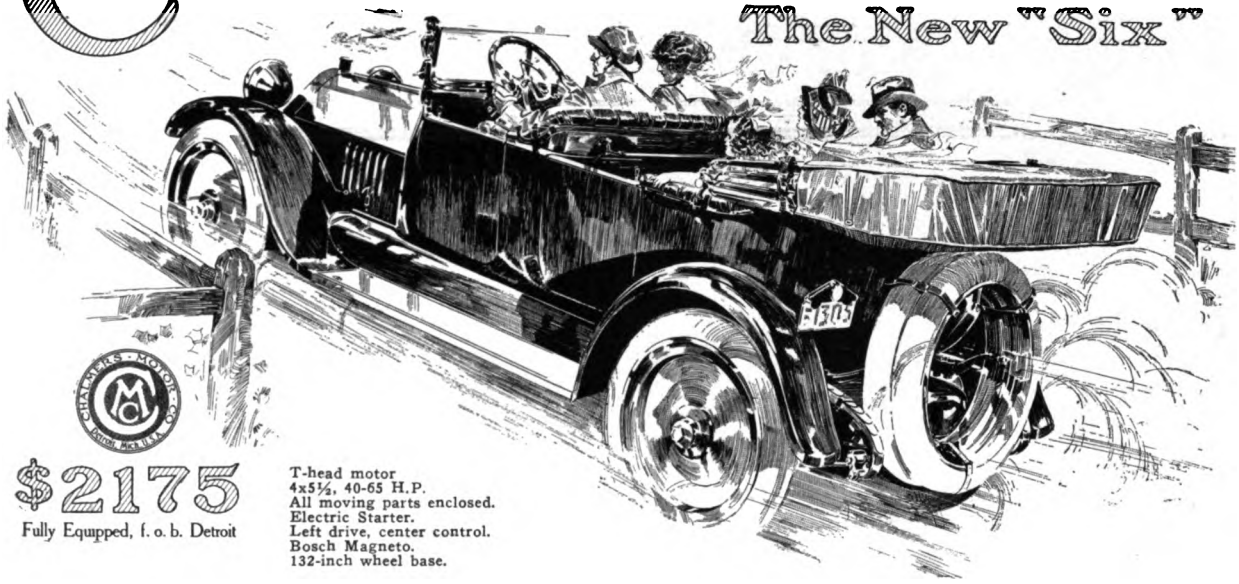
BRIGGS-DETROITER CO.

499 Holbrook Avenue **Detroit, Michigan**

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Chalmers—1914

The New "Six"



$2175

Fully Equipped, f. o. b. Detroit

T-head motor
4x5¼, 40-65 H.P.
All moving parts enclosed.
Electric Starter.
Left drive, center control.
Bosch Magneto.
132-inch wheel base.

The Ruler of a Kingdom

The man who sits at the steering wheel of his new Chalmers "Six," rules an empire. Here within reach of his arm is a little world all his own. Power, speed, endurance—the forces that make for change and enjoyment—are under the sway of his sceptor.

Let's Take a Day Off

Don't you feel like cutting the traces and getting away to the hills? Let's strike out—what do you say?

Push the switch of the electric starter. There—the engine is running with scarcely a sound. It's the silent Entz starter—the best yet—it never fails.

Floating Away Like a Swan

Close your eyes now as we let in the clutch and see if you can tell when we start. This new clutch is a wonder. The steel discs with their many fingers of cork, grip so firmly, yet so gently, that we move away with the silent grace of the swan.

Notice how flexible the power—mounting quickly to 20, 30, 40 miles an hour. Now we throttle it down to a crawl, without shifting gears.

This wondrous flexibility is in the motor itself. There's no need to resort to cumbersome double gearing.

Easy Chair Comfort

Have you noticed that you don't feel the vibration you do in most cars? The six cylinders of this Master Motor give an unbroken stream of power, there is no interruption in the push of the pistons. So there's a smoothness impossible in any "four"; a lack of vibration that adds years to the life of the car.

The new "Six" costs but little more than a "Four" at the start and a lot less in the end.

A Little Friend In Need

Try to stall this motor once. Throttle it down to a snail's pace—run it into that deep sand ahead.

It's no use—this motor is unstallable. Even should the gas be cut off accidentally, the electric starter—always on duty—keeps the motor running. It can never "go dead" in a crowd or on a crossing.

Beauty That Has Utility

Don't shrink as we run through this stretch of mud. Those graceful oval fenders sit so close not a drop of mud can reach you. The extra wide doors fit like a watch case. The long underslung springs cushion the bumps of the roughest road.

Left hand drive and center control leaves room to enter on either side.

Put This Car to the Test

Let our dealer take you out on our Standard Test Ride. It imposes no obligation. It's a part of our regular sales plan. It is our way of proving to you that this car will do things that no other car will do.

But first write for our literature. Get all the facts.

MODELS AND PRICES

Roadster	$2175	Six Passenger	$2275
Four Passenger	2175	Coupe	2850
Five Passenger	2175	Limousine	3600

All bodies interchangeable. Wire wheels, $80 extra (five).

Chalmers Motor Company, Detroit

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The Foreign Trend

The builders of motor cars abroad are constantly introducing new idcas, new body designs, new equipment and new methods of construction.

There are wire wheels and worm drive now. And other things are promised.

But some things there, as here, are standard.

One is The Jones Speedometer.

Seven years ago The Jones became Europe's most popular speedometer.

It won the Royal Automobile Club's gold medal for all around superiority in a test that covered 2,000 miles and lasted 30 days.

It was placed on the cars of the King of England, the Emperor of Germany, the Czar of Russia, the King of Italy, the King of Spain, and the Kings of Siam, Norway, Sweden, Denmark and Belgium. The President of Switzerland and the President of France, and hundreds of other notables used it.

It is used by these rulers and thousands of others on the best cars today.

No other speedometer ever gained such prestige or was ever so widely sold abroad. No other sells there today like the Jones. The love of new things—the foreign trend—doesn't dislodge the Jones.

It is regarded as the Standard Instrument because of its accuracy. And nobody ever thinks of displacing it. The makers of thousands of American cars are factory-equipping their product this year with the New Jones Speedometer.

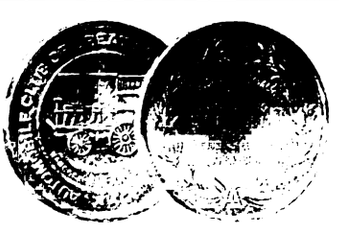
They expect their cars to be used the year 'round and they know the Jones isn't affected by temperature. The Jones is the Universal Speedometer. Makers and owners are finding this out. It is accurate, *always*. The simplest in principle. And the longest-lived.

It's the product of Jos. W. Jones, the inventor of the speedometer as used on motor cars. Nothing else will ever serve like the Jones Speedometer.

Let us send you the man who knows it in detail and can give you the fullest information in regard to placing it on your car.

THE JONES SPEEDOMETER

Broadway at 76th Street NEW YORK CITY



This is the Gold Medal presented to The Jones Speedometer by the Royal Automobile Club of Great Britain and Ireland. Eleven different instruments competed in the test—foreign and American makes. The Jones made the only perfect score on seven points of superiority. And the Jones is the only speedometer that has ever won this medal.

BRANCHES

New York, Broadway at 76th St.
Boston, 109 Massachusetts Ave.
Philadelphia, 1427 Vine St.
Chicago, 1430 Michigan Ave.
Baltimore, 217 W. Saratoga St.
Detroit, 872 Woodward Ave.
Buffalo, 20 Goodrich St.
Pittsburgh, 5904 Penn Ave.
Cleveland, 8451 Euclid Ave.
Charlotte, 209 Church St.
Memphis, Madison Ave. and 4th St.
Newark, N. J., 282 Halsey St.
Minneapolis, 800 Hennepin Ave.
Omaha, 1098 Harney St.
San Francisco, 1436 Van Ness Ave.
Los Angeles, 468 W. Pico St.
Portland, Ore., 71 Seventh St.
Seattle, 1710 Broadway
Indianapolis, 1291 State Life Bldg.
Atlanta, 35 North Pryor St.
New Orleans, Baronne and Perdido Sts.
Birmingham, 18 South 20th St.
Denver, 1600 Broadway
Albany, N. Y., 133 Hudson Ave.

FOREIGN AGENCIES

J. Millen & Son, Ltd., Montreal, Toronto, Winnipeg, Vancouver; Markt & Co. (London), Ltd., London; Markt & Co., Hamburg, Milan, Vienna, Barcelona; A. A. Kampfraath (Brussels), Ltd., Brussels, Amsterdam; Severin & Co., St. Petersburg; G. Bruggemann, Moscow; Y Wm. D. Rose, Paris; D. Easy & Co., Sydney, Australia; The Tarrant Motor Co., Melbourne, Australia; C. E. Helvie, Manila, P. I.; Adams, Ltd., Christchurch, N. Z.; Markt & Schaefer Co., Rio de Janeiro, Brazil; Buenos Aires, Argentine; Mexico City, Mex.; Habana, Cuba; San Juan, Porto Rico.

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INSURE your customers against spring breakage—at the same time that you are making a nice profit by handling Gilmer Rebound Straps.

Gilmer Rebound Strap

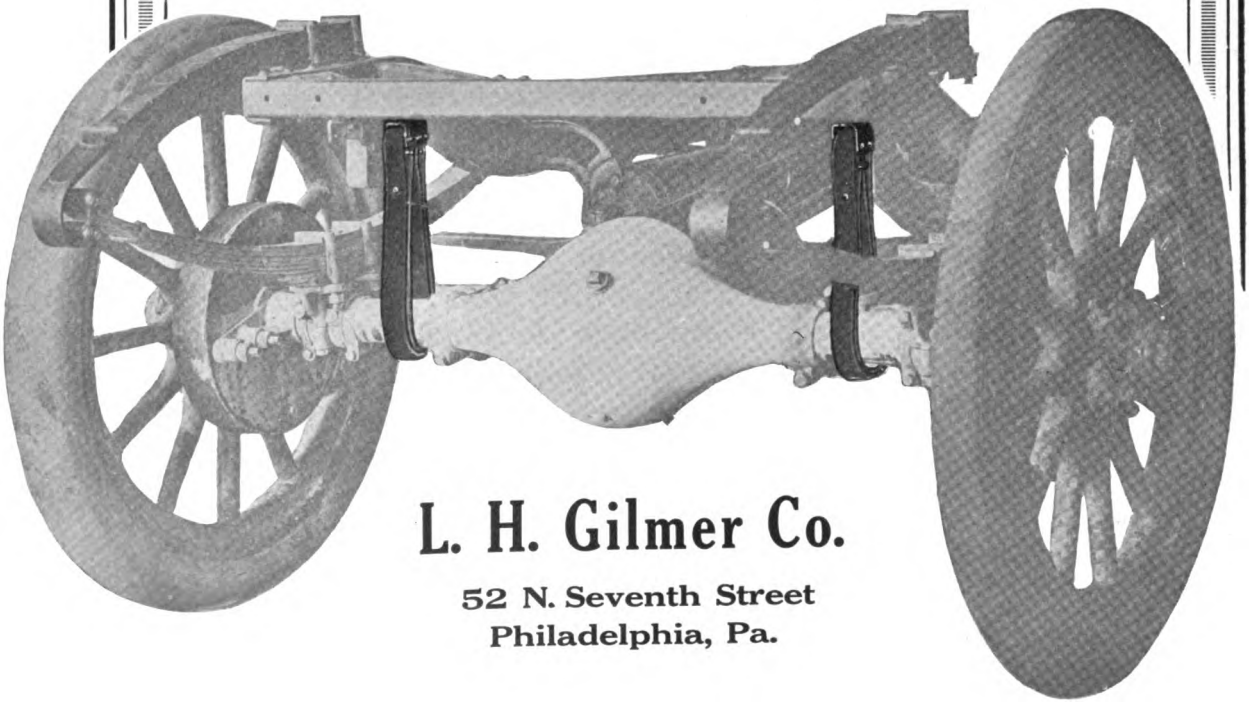
Gilmore Rebound Straps come in three different lengths, and they are made endless and woven from the highest grade long cotton yarn tested to 5000 pounds. They are waterproofed and weatherproofed, and guaranteed unbreakable for a year's service.

The fact that these straps have been tested and then adopted by the following car makers as regular equipment is ample proof to you of their superiority over the old-fashioned short lived leather straps---as well as proof that there is really a big demand for Gilmer Rebound Straps. The following cars are equipped with these straps: Packard, Cadillac, Hudson, Hupmobile, Premier, Cartercar, Westcott and Chevrolet.

Special for Ford Dealers

As special equipment for Ford cars we can supply you with with Gilmer Rebound Straps that can be installed in five minutes without drilling holes or requiring any special fittings. In use on Ford cars these straps not only protect the springs and occupants of the car from the extreme rebound jolts but they eliminate all sidesway and hold the car level.

Write us today for our special dealers' proposition on this fast seller. We also manufacture fan belts, endless belts of all kinds and cotton woven lacing to prevent hood rattling.



L. H. Gilmer Co.

52 N. Seventh Street
Philadelphia, Pa.

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HYATT QUIET BEARINGS



THE flexible Hyatt Roller absorbs vibrations instead of transmitting them, as in the case of a rigid bearing, and thus reduces the noise.

Hyatt Roller Bearings, by cushioning the road shock, relieve the gears and shafts of strain. The smooth Flexible Rollers give under excessive jars or jolts, but are rigid enough to carry the load and remain round.

Hyatt Roller Bearings are self cleaning and have a perfect system of lubrication. The hollow rollers carry the lubricant and the spirals, alternating from left to right, spread it throughout the bearing.

Any dirt or grit that gets into the bearing is forced into the hollow center of the roller through the spiral slots and is carried in the lubricant. This feature prevents it from grinding or cutting the bearing.

Our engineers' date book will give you complete information in regard to sizes, loads, etc.

HYATT ROLLER BEARING CO.

DETROIT, MICHIGAN

CHICAGO ILL. NEWARK N.J

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Gil Anderson

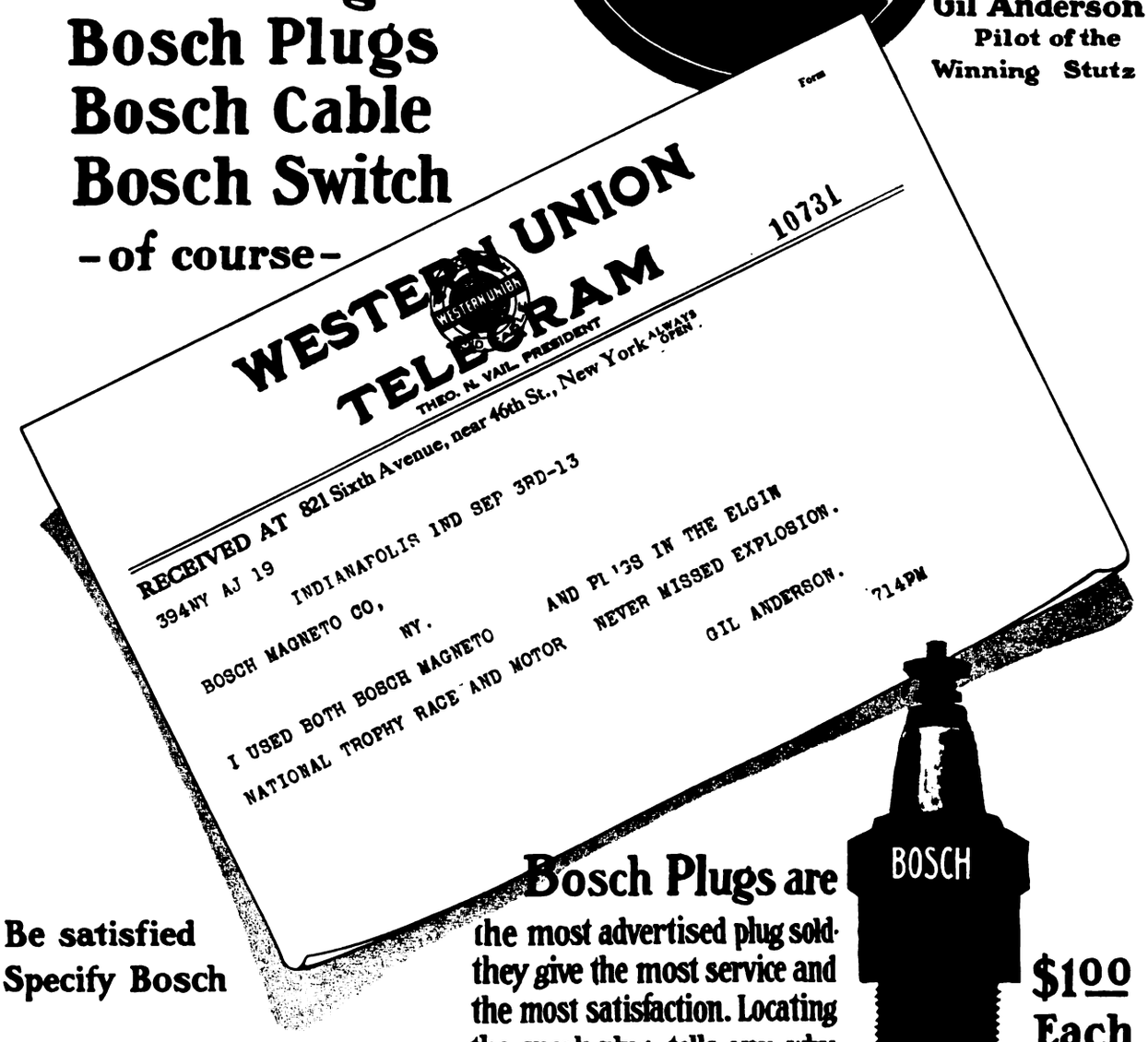
Winner of the Elgin Trophy

is another believer in using the best ignition equipment obtainable—he used

Bosch Magneto
Bosch Plugs
Bosch Cable
Bosch Switch
-of course-



Gil Anderson
Pilot of the Winning Stutz





Be satisfied
Specify Bosch

Bosch Plugs are the most advertised plug sold they give the most service and the most satisfaction. Locating the spark plug tells you why and proves it-write for it to day.

$1.00 Each

Bosch Magneto Co., 224 West 46th St-New York

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Never Before Such Springs as These!

Cleveland-Canton Automobile Springs

Springs that outlast ordinary springs three to one — springs that never seam, crack or split— springs that mean long life, reduced upkeep, retarded depreciation of your cars.

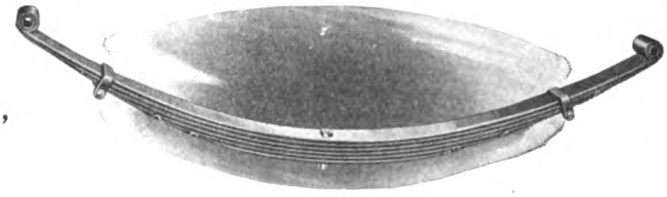
Steel experts tell us they have reached the limit in this new "cross-rolled" process. Instead of rolling the steel longitudinally only, the steel used in Cleveland-Canton Chrome-Vanadium Springs is worked both longitudinally and transversely.

It is knit closer together, more homogeneously, more uniformly. It is free from blow-holes, flaws, and hidden defects.

Only such steel is fit for Cleveland-Canton Chrome Vanadium Automobile Springs. We use it exclusively.

Cross-Rolled Chrome-Vanadium

"Not a Bump In One of Them"



"Built for Life-Long Endurance"

Poor springs ruin cars. For an engine cannot long stand the severe jolting and racking such springs permit.

But Cleveland-Canton Chrome-Vanadium Springs stand terrific strains, absorb the shocks, and are amazingly enduring. *In five years not one Cleveland-Canton Chrome-Vanadium Spring returned because of breakage or settling.*

If you want to
—Prolong the life of your engine
—Reduce up-keep expense
—Retard depreciation
—Add to comfort and safety
—Prevent delays and repairs

See that your cars are equipped with Cleveland-Canton Chrome-Vanadium Springs. They shield the whole delicate mechanism of the car and carry it gently over rough roads. You should be vitally interested in this. Let us tell you the whole story. Write today.

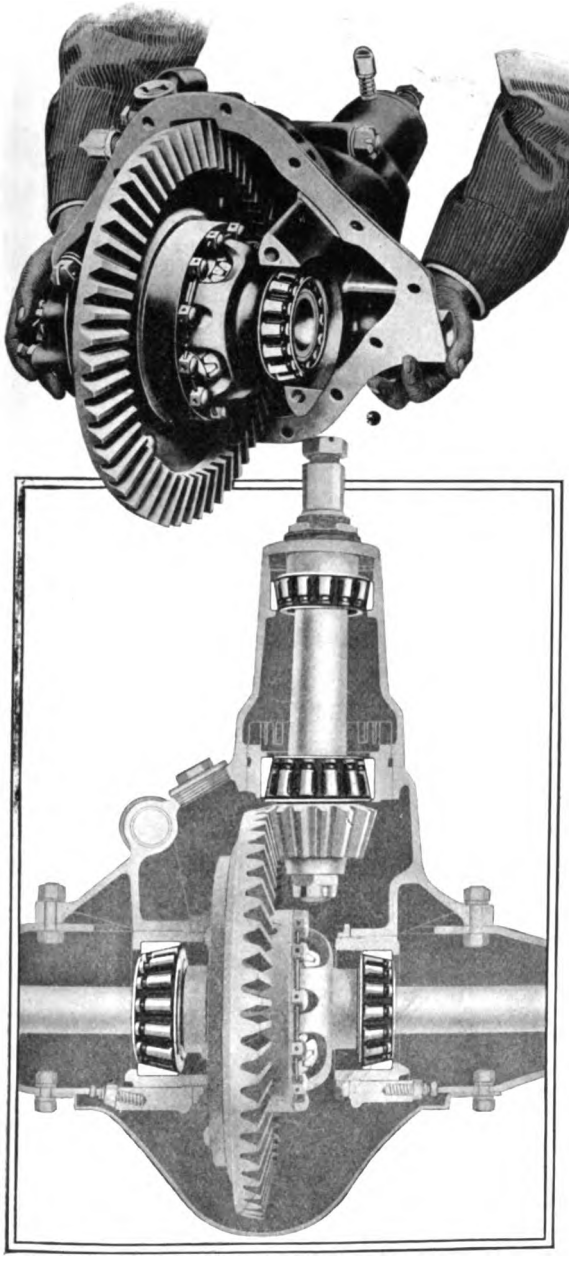
Best Grade—Chrome-Vanadium
Next Best—Special Analysis

The Cleveland-Canton Spring Co.

Canton, Ohio, U. S. A.

TRADE CLEVELAND MARK CANTON

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Unit Power Transmitting Plant of a Timken-Detroit Rear Axle

TIMKEN-DETROIT
AXLES

The Teeth that Always Fit

Part II

A Sequel to the Gear with the Polished Teeth

THESE gears with polished teeth are made to fit. ¶ The angles and curves of their shining surfaces are exact. ¶ They are fixed by the Timken process of grinding every gear to its master pinion, every pinion to its master gear.

But that accuracy of gear-grinding is not enough. We must know that the teeth will fit *after the gears are installed, as long as they are in the car*—or uneven wear, noise. and loss of power would result.

How We Know the Teeth Will Fit

All the gears are supported by a pear-shaped carrier bolted to the front of the axle-housing.

The pinion shaft enters from the front. the driving gear and differential are supported by two curved arms extending into the housing at the rear.

It is because we know that carrier is made right that we know the teeth of the gears will always fit.

Four Big Problems

The front of the carrier must be in a plane exactly at right angles to the plane of the drive-gear; the axle shafts must also be exactly at right angles to the plane of the drive gear; and at exactly the right distance from the pinion; the pinion-shaft must be exactly parallel to the plane of the drive-gear.

These four problems are each double—each step must be done right, each must be proved right after it is done.

The doing and the proving are two mighty interesting chapters in the story of "The Teeth that Always Fit."

In the next issue of this magazine you will find Part Three of this series, on "The Four Holes."

NOTE:—To get the full significance of this series you should read Part I —"The Gear with the Polished Teeth," which appeared in the previous issue. If you haven't a copy we shall be glad to mail you one.

The Timken-Detroit Axle Co.
Detroit, Michigan

(22)

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EISEMANN

100% Efficiency

OF the nineteen cars that made the trip from Indianapolis to the Pacific Coast in the recent Indiana-Pacific Tour eleven depended upon Eisemann Ignition. Here was a striking illustration of the faith American automobile manufacturers had in the dependability of Eisemann products before the tour. Each one of the eleven Eisemann Systems made the trip without missing a shot and sustained this extreme test of their efficiency with absolutely perfect scores.

Fording rivers, pushing through mud, dusting through clouds of alkali, one day on the level plains, the next climbing mountains, over all kinds of roads, meeting the varying conditions of atmosphere in extremely high altitudes and sea-level with the same characteristic efficiency as if working under normal conditions of uniform everyday use—this is the sort of ignition you want on your cars.

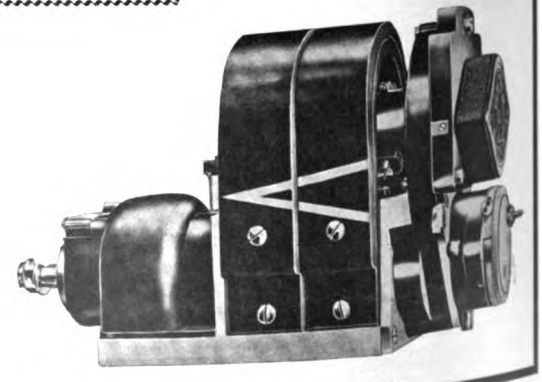
You have no requirements, whether you make pleasure cars or trucks, that an Eisemann System cannot fulfill better than any other. And we say this advisedly. Closer limits are common in truck practice than in the pleasure car field when it comes to economical working. Sixty-four or more manufacturers in America are now using Eisemann Ignition, thirty-nine of which are truck manufacturers.

What Eisemann Ignition is doing for thousands of others it will do for you—if you but give it a chance. Communicate direct with our nearest factory branch or through your dealer.

The Eisemann Magneto Company
225-227 West 57th Street, NEW YORK

INDIANAPOLIS, IND.
514 North Capitol Avenue

DETROIT, MICH.
802 Woodward Avenue



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The Car You Can Sell Against Both High and Low-Priced Sixes

In the Havers 6-60, at $2485, with the most complete equipment ever put on any car, we offer you a car that occupies its own field.

And that field, you recognize, virtually removes the car from both high and low-priced competition.

On the other hand, the Havers is so high in quality, and makes such a complete offering of all the six-cylinder advantages, that it is bound to attract buyers from both classes.

The man who has paid more for his six has not had—and will not get—more than the Havers 6-60 brings him; a fact that will impress itself upon him when he sees the 6-60.

The man who has had one experience with the average six of low price now realizes that his car fell short in many respects.

So there are two great bodies of men who are potential Havers buyers.

Havers dealers took all of the 1913 product we could build. The close of the selling season found the factory floors and the dealers' floors clean of cars.

The 1914 production is now going into dealers' hands. New contracts are being closed. All our old dealers are holding the line; new ones are coming in, for we shall build more cars for 1914.

Every dealer who has investigated the Havers record in the past year, and the new car, sees for it sales even more readily closed.

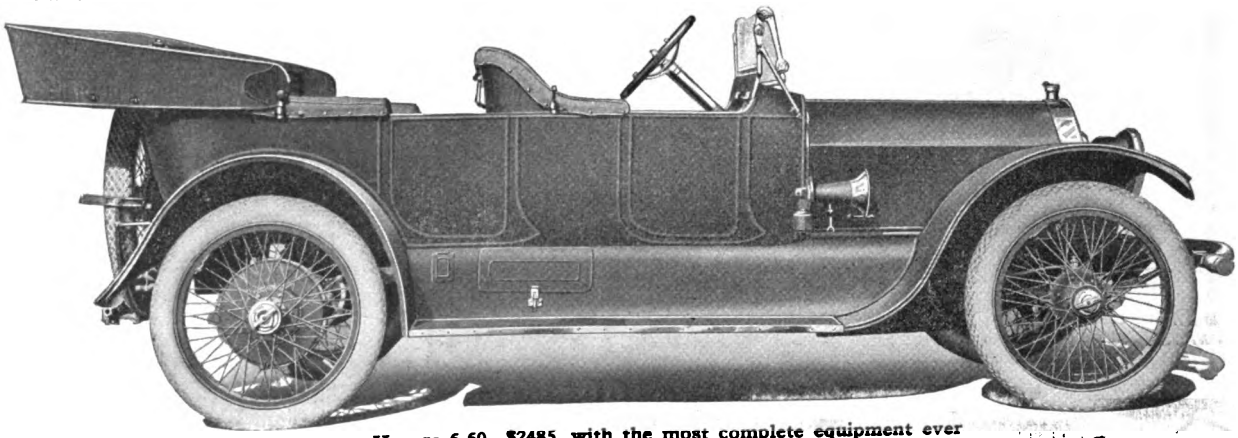
Full-powered, high grade, built of standard units of known quality and highest repute, more completely equipped than any other car on the market—the Havers 6-60 offers all that any six can offer, and more than most.

If you have or can make a place in your business for such a car our advice is to waste no time in getting in touch with us.

1914 Features

Seven passenger body.
Seat covers.
Front bumper.
Rear double tire irons.
Klaxet horn.
Power tire inflator.
Rain vision windshield built as part of body.
Gasoline gauge.
Air pressure gauge.
8-day clock.
Ammeter.
Volt meter.
Large dial speedometer.
Two cowl-board lights.
Tonneau light.
Oil can holders.
Electric starter and lights.
10 gallon reserve gasoline tank at rear.
Foot scrapers on running board.

HAVERS MOTOR CAR COMPANY, Port Huron, Michigan



Havers 6-60—$2485, with the most complete equipment ever put on a car as "regular."
Havers 6-44—$1985, with complete equipment.

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INVADER OIL

Why the Owner Should Use It

¶ It will lessen mechanical depreciation. It will lessen the expense of grinding valves. It will keep the whole interior of the cylinders cleaner—adding both compression and power. It will keep the motor cooler and make it run sweeter.

¶ Invader Oil is refined from Pure Pennsylvania Crude, is distilled and filtered, and has maintained only one Standard of quality ever since the automobile came to this country. It is the Pioneer Light Oil and is better than other oils for the very simple reason that it has a higher gravity, a higher fire test and a lower carbon test.

¶ If your dealer does not carry Invader Oil we can supply you direct, freight prepaid, in any quantity. Just write us.

I. O. C. GEAR OIL puts noisy gears to sleep. It reduces friction and absolutely eliminates noise. Write for prices and descriptive booklet.



FACTORIES:
NEW YORK.....92 Pearl St.
PHILADELPHIA.....113 Arch St.

BRANCHES:
BOSTON.....284 Columbus Ave.
WASHINGTON, 3627 New Hampshire Ave., N. W.
PHILADELPHIA.....113 Arch St.

INVADER

Lessees of Cha

Main Office: 81 BROAD

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INVADER OIL

Why the Dealer Should Carry It

¶ While it is not the cheapest, it is the highest grade oil made in this country today and every dealer has certain customers who will use the best oil even if they have to pay ten or fifteen cents more for it.

¶ It adds to the tone of any establishment to carry a stock of high grade goods, no matter what they are.

¶ The increased cost of Pennsylvania Crude has lessoned the supply of high gravity oils and flooded the market with low grade, low gravity oils, totally unfit for automobile lubrication.

¶ Invader Oil has a higher gravity than other oils, and it is a well known scientific fact that high gravity oils are freer from carbon than low gravity oils. Write us.

I. O. C. GEAR OIL is the only oil ever made especially and exclusively for automobile transmission gears. Write for prices and descriptive booklet.



OIL COMPANY

. Kellom & Co.

STREET, NEW YORK

TERRITORIAL AGENTS

Boyer-Campbell Co. ..... Detroit, Mich.
Beck & Corbitt Iron Co. ..... St. Louis, Mo.
Motor Car Supply Co. ..... Chicago, Ill.
Lee Hardware Co. ..... Salina, Kan.
American Lubricating & Supply Co., Kansas City, Mo.
James Bailey Company ..... Portland, Me.

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H U P

The 1914 Hupmobile is in the hands of Hupmobile distributers.

We believe this new Hupmobile to be the **best** car of its class in the world.

By **best,** we mean best in internal essentials, especially. We mean best in those things which make for long life and continuous service at lowest cost.

But we believe you will also pronounce it the **most beautiful** car of its class in the world.

We believe we have put **more money into the chassis** than any car of its class in the world.

We base these beliefs on our conviction—

That the production of this new Hupmobile incorporates a greater tonnage of **high grade steel** than any car of its class in the world;

That this new Hupmobile is the **largest user of aluminum**—without regard to class or price—in the world;

That the frame used in the new Hupmobile **is the costliest piece of pressed steel construction used** by any car of its class in the world;

That the Hupmobile long-stroke motor will **outpull any engine** of its class in the world;

That the Hupmobile **pressed steel body** — designed by us and built by the builders of Pullman cars—is the costliest body used by any car of its class in the world;

That Hupmobile **springs** utilize a greater tonnage of **costly** steel — more than 2,000 tons — than any other car of its class in the world;

That Hupmobile bearings—Timken and Hyatt—are the best in the world; one whole Hyatt building being devoted to Hupmobile bearings.

We repeat—for readiness; for ruggedness; for smartness of style; for fineness of finish; for daily work on the road; for extremest economy—we believe this new Hupmobile to be the best car of its class in the world.

Details of The 1914 Hupmobile

Long-stroke, small-bore motor; cylinders cast en bloc, with enclosed valves; three bearing crankshaft, hollowed for circulation of oil; chain drive for magneto and cam shaft; unit power plant with multiple disc clutch; full floating rear axle; hood harmonized with body, without abrupt break at the dash; gasoline tank under the scuttle dash or cowl—

These are Hupmobile features which were new to the American market when the present type Hupmobile was introduced almost two years ago.

They are standard in the Hupmobile for 1914; many of them have been adopted by other American manufacturers; and a forecast of the 1914 European models published July 3 in "The Automobile"—the recognized authority—shows that nearly all of them are included in the latest Continental productions.

More than that, they remain Hupmobile standard because, in nearly two years of service, they have demonstrated their worth.

The body is unchanged, save for minor detailed improvements. The back of the front seat, in the touring car, is upholstered; the doors are upholstered, with pockets, and given a more substantial appearance.

A rain-vision, ventilating windshield, replaces the present type, though still hinged at its point of attachment to the car, so that it can be lowered forward if desired.

The capacity of the gasoline tank is increased approximately three gallons.

Oversize tires—33x4-inch—will be regular equipment for the $1200 car; also demountable rims, one extra rim and rear tire carrier, which clamps the rim without touching the rubber casing.

An electric horn, concealed under the hood, is included in the equipment. The horn button is at the center of the steering wheel.

Electrical starting and lighting are accomplished by the Westinghouse two unit system—separate generator and starting motor—with independent magneto ignition. Thus the ignition is not cut off in case accident should befall the generator, nor is the starting motor disabled for like cause, having the battery's store of electricity on which to operate—an advantage not found in systems where all electrical functions are centered in one machine.

The six-volt starting motor is practically built into the Hupmobile engine.

By means of a pedal convenient to the driver's left foot, a gear is shifted into engagement with a gear on the flywheel. The same motion of the operator's foot that engages the gears also closes the starting switch, and the starting motor is revolving slowly before the gears engage, thus greatly facilitating the operation.

The electric lighting equipment includes two headlights, with 16 c. p. bulbs adjustable for focus, and combination electric and oil side and tail lamps.

Current for the lamps is drawn direct from the generator, except at very low speed on high gear; so that the battery current is used only for the starting motor. The generator automatically keeps the battery up to full charge at all times.

Hupp Motor Car Company, 1254 Milwaukee Avenue, Detroit, Michigan

SPECIFICATIONS

"32" Touring Car or Roadster—$1050 f. o. b. Detroit

Four-cylinder long-stroke motor. 3¼x5½ inches; unit power plant. Selective type transmission, sliding gears. Center control. Full floating rear axle. 106-inch wheel base. Tires, 32x3½, Q. D. Rear shock absorber. Magneto cover.

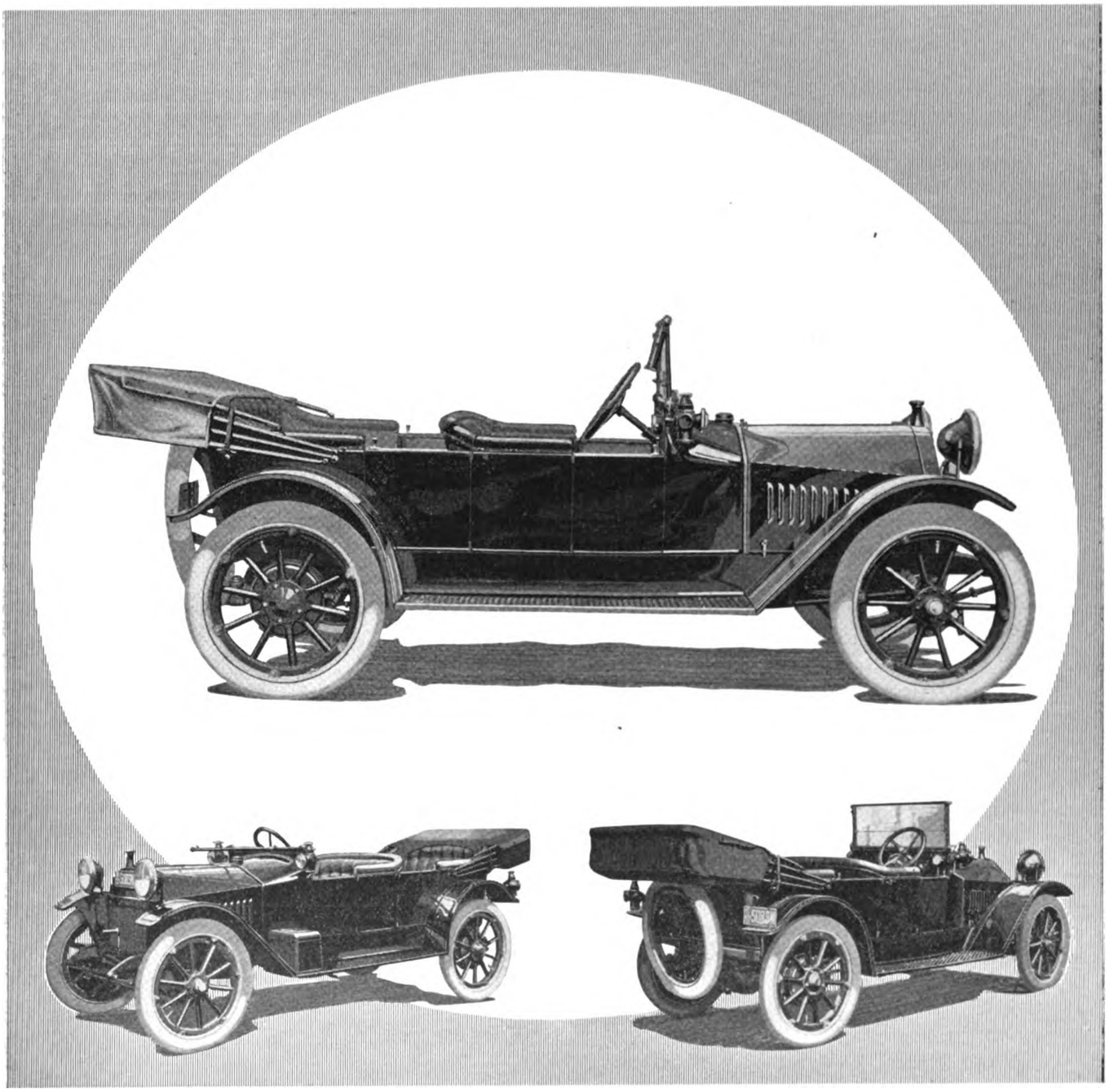
Equipment—Electric horn; rain vision ventilating windshield; mohair top with envelope; Hupmobile Jiffy curtains; speedometer; cocoa mat in tonneau; Prest-O-Lite; oil lamps; tools. Trimmings, black and nickel.

"32" Touring Car or Two-passenger Roadster with Westinghouse two-unit electric generator and starter; electric lights; over-size tires, 33x4 inches; demountable rims, extra rim and tire carrier at rear—$1200 f. o. b. Detroit.

The car of The

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mobile



American Family

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The Allen Motor Company

Fostoria, Ohio

1914 ANNOUNCEMENT

List Price of Five Passenger Touring Car

$1395.00

ALLEN 40

The Big Car with the Little Price

List Price of Roadster

$1395.00

GREATEST MOTOR CAR VALUE OF THE SEASON

Our second season of Motor Car building, but we have a quarter of a century of Manufacturing experience.

IMPORTANT SPECIFICATIONS

Electric Auto-Lite starting and lighting system (generator and electric motor in separate units, storage battery and all connections, switches, etc.)

Stream-line body.

Left side drive, center control.

Multiple disc clutch with Raybestos lining (dry or oil).

Wheelbase, 118 inches.

Motor cast en bloc, 4⅛ x 5.

Unit power plant—three point suspension.

Enclosed valves.

Warner Muncie selective type transmission with imported bearings throughout.

34 x 4 tires. Demountable rims.

Hess full floating rear axle with pressed steel housing and imported annular ball bearings.

Brake drums, 14 inches, all enclosed.

Gasoline tank in shroud dash.

Steering wheel 18 inches—irreversible gear.

Strictly No. 1 machine buffed leather used in upholstering.

Deep tilted cushions.

Ammeter.

Splitdorf magneto.

Battery and lighting switches and all dash equipment in auxiliary dash convenient for operator.

One-piece windshield built integral with body.

Genuine mohair top and boot.

Quickly adjusted inside curtains.

Electric horn.

Stewart revolving dial speedometer.

Heavy nickel trimming throughout.

Headlights, 12½ inches.

Bullet side lamps.

Foot rest rail. Nickel robe rail.

Tire irons, pump, jack, tools, tire repair kit, etc., complete.

THE ALLEN MOTOR COMPANY, Fostoria, Ohio

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We Make *Pneumatic* Tires Only And Therefore Make Them Well

THE SPECIALIST is a leader because he can produce in his particular line *better* than the man of general attainments. We are Specialists in the Manufacture of Pneumatic Tires. For fourteen years, since beginning business, we have made nothing else.

The outcome is what anyone would expect—SUPERIORITY—fairly reflecting such concentrated effort—an exclusive construction, known as Fisk Heavy Car Type, in which are embodied the lessons we have learned.

The *Quality* of our product is backed by integrity that has never been questioned, and an organization which, from the President down to each of the Branch Managers and assistants, is dominated by a spirit which places "the satisfaction of customers," whether dealers or consumers, above all other considerations.

We make Heavy Car Type Fisk Tires in all styles to fit all rims—Plain Tread or the famous Town Car (non-skid) Tread. Write Dept. 23 for Fisk Dealer Proposition.

THE FISK RUBBER COMPANY

Factory and Home Office **Chicopee Falls, Mass.**

The Fisk Rubber Company of N. Y.—Branches

ATLANTA	CHICAGO	FARGO	MILWAUKEE	PITTSBURGH	SEATTLE
BALTIMORE	CINCINNATI	FRESNO	MINNEAPOLIS	PORTLAND	SPRINGFIELD
BOSTON	CLEVELAND	HARTFORD	NEW ORLEANS	PROVIDENCE	ST. LOUIS
BROOKLYN	DETROIT	INDIANAPOLIS	OAKLAND	ROCHESTER	ST. PAUL
BUFFALO	DES MOINES	KANSAS CITY	OMAHA	SACRAMENTO	SYRACUSE
BUTTE	DENVER	LOS ANGELES	PHILADELPHIA	SAN FRANCISCO	WORCESTER
		NEW YORK			

THE FISK COMPANY OF TEXAS—DALLAS, SAN ANTONIO, HOUSTON

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At Last—A Plan

Dealers Can Sell CORREJA Cars on Time

No Disagreeable or Humiliating Methods Enter Into Plan; Nothing But a Clean-Cut, Business-Like Arrangement.

Thousands of people would own cars if they could buy them on time. It is true they can now, but in a most disagreeable way and with the humiliation of having a chattel mortgage attached. The Correja Plan is simply the adaptation of business methods in vogue in every-day commercial life to the purchase of an automobile.

THE PLAN

The Dealer is required to invest $1500. We provide a demonstrating car free, so that an established dealer or a prospective dealer can secure the Correja agency and suitable territory at a minimum outlay.

The Dealer receives commissions (in cash) for all cars sold, immediately upon acceptance of order by the factory.

The Dealer takes deposit with order.

The Factory takes purchaser's notes for balance of purchase price.

The Factory assumes all risks.

The Factory makes all collections.

The Purchaser buys a car just as a merchant would buy a bill of goods on time, or as a manufacturer buys his machinery and equipment—on notes, payable as they mature.

The Purchaser pays no more than $1800 (list price) whether buying on installment plan or for cash.

The Purchaser receives unexcelled car value, service and courteous business treatment at all times.

Banking References: Bradstreets, Duns, or any New York Bank.

Not having spent a fortune in advertising in publications charging from two to five thousand dollars per insertion to get this car before the public, we are in position to offer it at a price ranging two-thirds less than the well known advertised cars, none of which can excel the Correja, the car which is "Built on Honor."

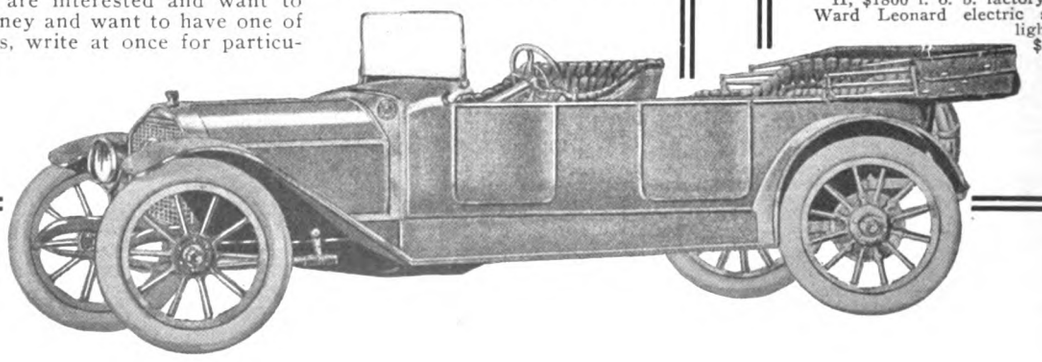
We want to show you how to get a Correja car for yourself absolutely free and to make a large revenue by becoming a Correja dealer.

If you are interested and want to make money and want to have one of these cars, write at once for particulars.

THE CAR

The illustration shows the Correja Six Cylinder, 50 H. P., 1914 Model H. CORREJA cars are "Built on Honor."

WHEELBASE—125 inches.
MOTOR—Six cylinder, T head, cast in pairs; silent chain driving timing gears. Bore 3½ in., stroke 5 in.
IGNITION—Magneto generator.
LUBRICATION—Force feed splash.
STEERING—Worm and gear type; 18 in. handwheel with mahogany rim.
CLUTCH—Correja cone type.
TRANSMISSION — Selective, three speeds forward and reverse, located on rear axle. Chrome nickel gears, nickel steel shaft, annular bearings throughout.
AXLES—Rear, full floating with bevel gear removable through axle housing from rear; annular bearings. Front, drop forged one piece I beam section. Yokes and steering knuckles, steel forgings.
WHEELS — Heavy artillery type, selected hickory.
TIRES—34 x 4, standard make.
SPRINGS—36 in. semi-elliptic front; 44 in. three-quarter elliptic rear.
BRAKES—Two pair, internal expanding in pressed steel drums.
BODY — Exceptionally strong and rigid. Sheet metal over hardwood frame. Upholstered in black leather over deep coil springs.
PAINTING—Beechnut brown standard.
EQUIPMENT — Extra demountable rim, headlights (2), dashlights (2), tail light (all electric), windshield, top with side curtains and boot. Tools and tire repair kit.
PRICE—60 H. P. Six Cylinder Model H, $1800 f. o. b. factory.
Ward Leonard electric starting and lighting system, $100 extra.



THOMAS HOWARD COMPANY, Inc., Sole Factory Representative

319 Atlantic Avenue, Brooklyn, N. Y. **Factory, Elizabeth, N. J.**

Wideawake Dealers are requested to write or wire for Sales Plan and Territory. Don't let the other man get ahead of you.

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Consider what it would mean to YOU to sell the Stearns-Knight

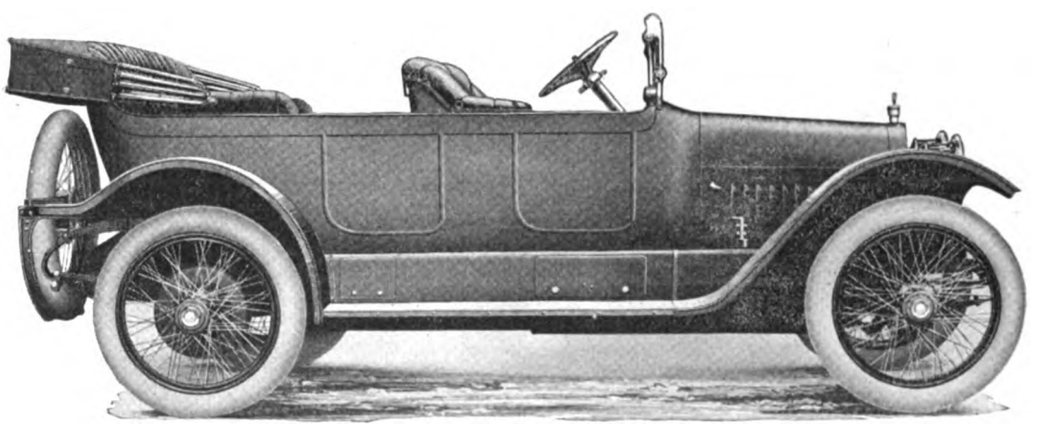
—consider what it would mean to sell a car so simple in construction—so free from complications—that a minimum of attention is required after the sale.

Consider what it would mean to have the owner so well satisfied that he is constantly **working for you.**

And consider what it would mean to enjoy the prestige which goes with the name Stearns—to know that you are backed up by one of the oldest and strongest manufacturers in the industry.

These advantages weigh heavily with dealers who can see beyond the immediate sale. And they do not mean restricted contract conditions—on the contrary the Stearns contract is probably more liberal than that of any other high grade car manufacturer. There is still territory open for the right kind of dealers.

THE F. B. STEARNS COMPANY
Cleveland, Ohio



Stearns-Knight Four-Cylinder, Five-Passenger Touring Car (Wire Wheels Extra)

The new 1914 series of Stearns-Knight cars are the most noteworthy models ever produced. In addition to the wonderfully efficient power plant, the best ideas of late American and European practice have been incorporated in a remarkably wide range of models.

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MERCER

A Constant Winner

A 300 CUBIC INCH MERCER driven by Ralph De Palma, won the 302-Mile Cobe Trophy Race at Elgin, Ill., Aug. 29, at an average speed of 66.8 miles per hour. This is the third consecutive year the Mercer has won the 300-inch division of the Elgin races.

The winning of one race, or even several races, does not necessarily indicate that any particular car possesses superior qualities from a speed and utility viewpoint, consistency, continued participation in racing, and the comparative merit of a car's performance is what proves its claim to championship honors.

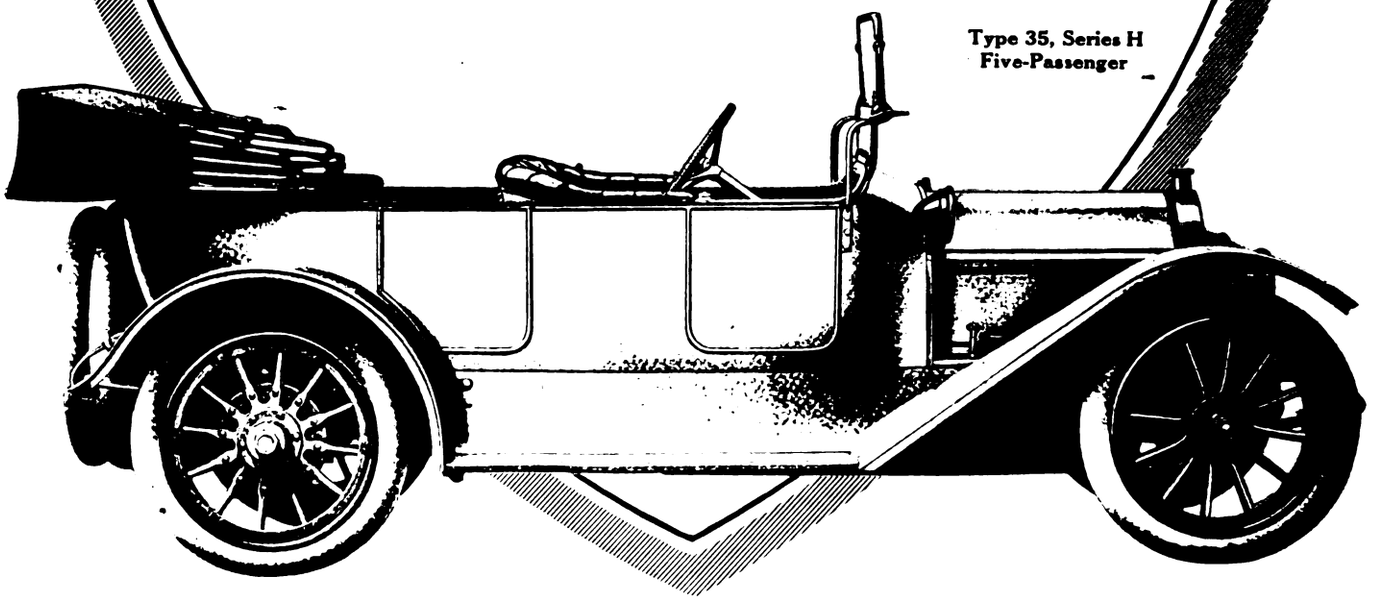
The Mercer record for the past three years speaks volumes.

There is no greater asset for the dealer than the car's actual performance. Think what Mercer victories mean to Mercer dealers

Write Today Regarding Unalotted Territory

MERCER AUTOMOBILE COMPANY

700 Whitehead Road, Trenton, N. J.



Type 35, Series H
Five-Passenger

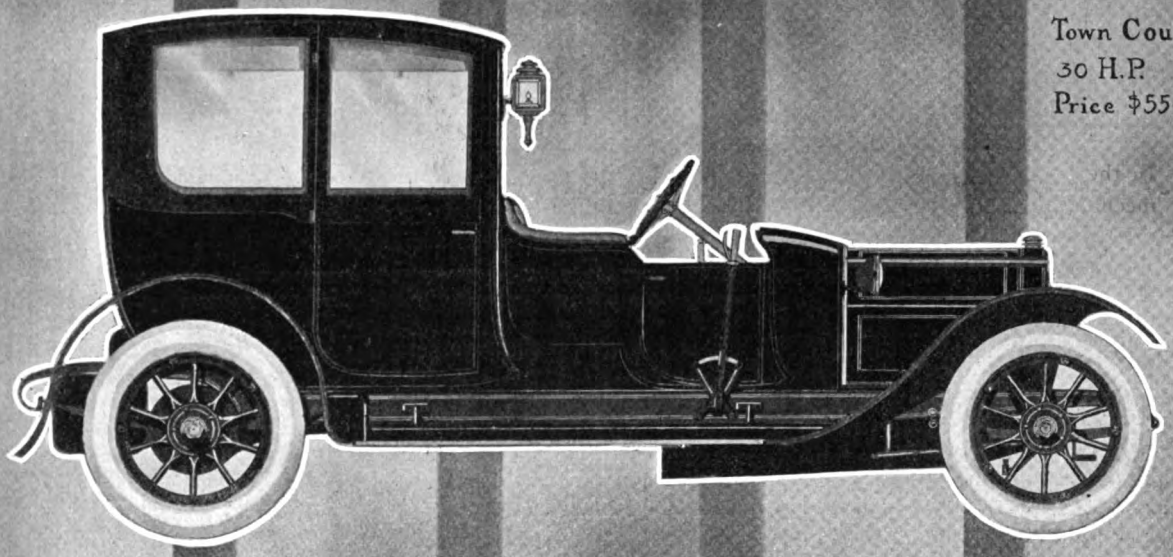
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-DEALERS-

Europe's Leading Car

Lancia

sells at AMERICAN PRICES



Town Coupe.
30 H.P.
Price $5500

The average would-be owner of a foreign car associates out-of-ordinary quality with prices beyond reason. He, in common with the majority of those who understand car value, wants such a car; but the prices of European products are prohibitive.

Lancia cars with all of the swing, dash and exclusive design, that only foreign designers and artizans can make possible, sell at American prices.

Lancia cars, made from steel that only Europe can turn out and with engineering features that America cannot touch, sell for American prices.

You, Mr. Dealer, have a market place for the Lancia, the car of durability, silence, flexibility, speed and rakish design. We will help you make your sales. Write and get our plan and proposition.

ADAMS-LANCIA COMPANY
235 West 58th Street, New York City

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THE STURDY STUTZ
MADE GOOD IN A DAY

Get the New Stutz Series "E" Catalog—Now Ready

See the Sturdy Stutz Before You Decide

All we ask is, that before you select your next motor car, you compare the Stutz, part by part, with any car at any price—then you, too, will decide in favor of the Sturdy Stutz.

New Models Even Better Than Previous Stutz Cars

In the new Series "E" Stutz, no radical mechanical changes have been made—they were not necessary. Just a few details have been altered, insuring even greater service and power, with a few touches that add to the graceful beauty lines for which all Stutz Models have been famous.

The bodies of the Touring Cars are larger, roomier and even more comfortable than ever before. The upholstering is more generous, the springs are a little longer—the same perfection mechanically has been maintained.

The Electric Starting, Lighting and Ignition systems are **separate units**; simple, dependable and easy to operate.

So before you decide, write for our new illustrated Catalog No. A-15, Series "E." We will put you in touch with your nearest Stutz dealer.

We still have some desirable territory open and will make a satisfactory contract with responsible dealers—write us.

Stutz Motor Car Co. of Indianapolis



Six-Passenger Touring Car,
Four-Cylinder, $2150
Six-Cylinder, $2400.

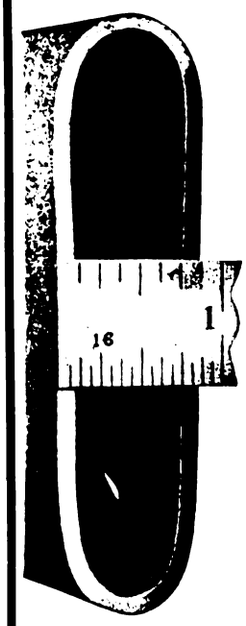
STUTZ — the car that made good in a day

STUTZ — the car that made good in a day

STUTZ — the car that made good in a day

No Man Knows
Greater Tube Quality

No man—whether he be manufacturer, dealer or user—knows greater quality than we give in Marathon Tubes. No tube can have greater quality built into it. That is impossible. In Marathon Red Inner Tubes, we build in the most and the finest quality it is possible to put into a tube. We do it this way:



Finest Pure Gum

First of all we use nothing but the finest rubber. And we use it pure. It is not compounded. But this pure gum is given the utmost in life, toughness and strength by our special formula.

6 Fold Enforcement

To prevent the possibility of weakness or imperfections, we use 6 plies of rubber (9 plies in 4½ to 6 inch sizes). With that reinforcement slow leaks are out of the question. Marathons stay inflated.

Weighted and Measured

Each Marathon Tube is both weighed and measured before curing. It must conform precisely to our exacting standards. That double test insures accuracy and uniformity.

Note the Thickness

The picture is from an actual photo of a 34 x 4 stock tube in section. Note the great thickness. Think how this great tube overcomes all tube troubles.

Resists Heat

Our red coloring matter renders pure rubber highly heat resisting. The Marathon Red Tube positively will not stick to the casing.

Men Want It

Motorists want this tube—it gives the quality they want.

Marathon costs a little more. But it gives twice as much—in quality and service.

The best dealers are selling Marathon tubes—(and tires). If your trade wants the BEST, YOU can sell them—they sell themselves.

WRITE FOR OUR EXCLUSIVE DISTRIBUTOR'S PROPOSITION.

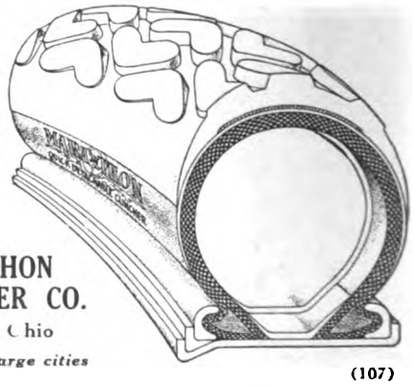
MARATHON
SIDE-WIRE ENDURANCE

Exclusive Sale
Of Marathon 4,000 Mile Tires

In this tire, like in Marathon Inner Tubes, we build the most and finest quality possible, regardless of cost.

We have an exclusive sales proposition for a few distributors whose trade demands the best.

Write us today.



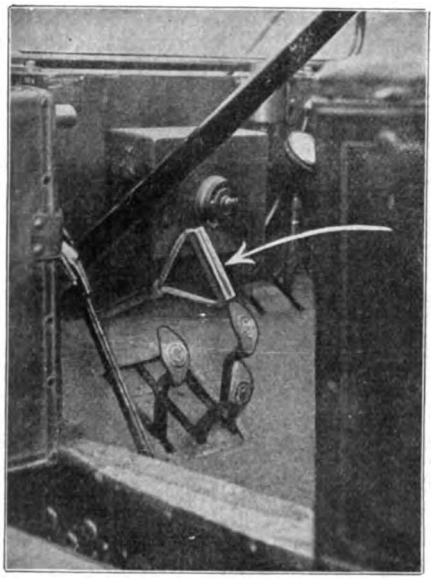
THE MARATHON TIRE & RUBBER CO.
Cuyahoga Falls, Ohio

Distributors in most large cities

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STOP!---SAVE MONEY



$9.00--FORD ENGINE STARTER--$9.00

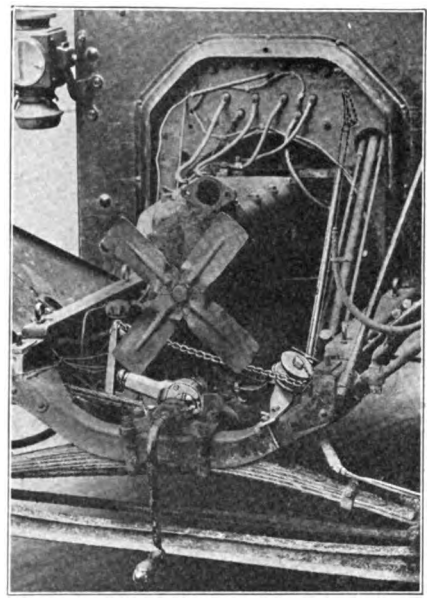
"It is out of sight," under the hood. All that shows is a small hand lever on dash. You do not have to leave your seat to start your FORD MOTOR when equipped with same.

All that is necessary is to pull the lever. Will POSITIVELY TURN YOUR MOTOR OVER EVERY TIME. With this starter YOU HAVE TWO STARTING DEVICES. YOU DO NOT HAVE TO REMOVE THE CRANK. **IT STAYS ON.**

FOR THE NEXT 60 DAYS TO THOROUGHLY INTRODUCE OUR STARTER WE WILL MAKE THE ABOVE PRICE.

NO MORE BROKEN ARMS. BACK KICKS ARE DANGEROUS.

DIRECT ON RECEIPT OF PRICE.



$9.00---ORDER TODAY---$9.00

Bremer-Wilson Manufacturing Co.
1421 Michigan Ave., Chicago, Ill.

Billings & Spencer Tools

"The tools that are guaranteed"



The high quality of the triangle trademarked tools is recognized throughout the automobile trade. B. & S. auto tool kits are a ready seller for the dealer and an invaluable investment for the consumer.

Specify them for your 1914 car

THE MARK OF QUALITY
B
THE BILLINGS & SPENCER CO.
HARTFORD

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Dealers and Accessory Manufacturers Will Profit Greatly

by keeping abreast of the rapid development of the "two-wheeler."

The Bicycling World FOUNDED 1877
and
Motorcycle Review

Published Every Tuesday — $2.00 a Year

This publication records weekly all that is of interest to the trade and to the rider. If you aren't fully acquainted with the paper and the possibilities offered by the field it covers send for free sample copy.

BICYCLING WORLD AND MOTORCYCLE REVIEW, 1600 Broadway, New York

All Kinds of Cleaning Takes This Form



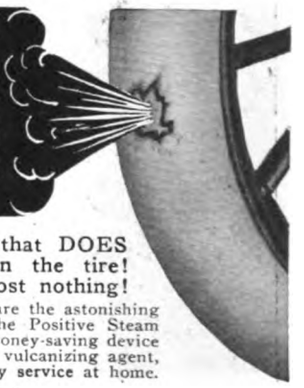
Nothing else cuts grease from the hands so quickly and completely; nothing else removes tarnished spots, stains and all foreign matter so **easily,** as Old Dutch Cleanser.

Around the shop, factory, garage, office and in the home—nothing takes hold with such power—gives the satisfaction—**saves time and labor**—like Old Dutch Cleanser.

Just as effective in cleaning soiled hands.

Many other uses and full directions on large sifter-can — 10c.

Let STEAM Do Mending In 20 Minutes!



At last! A handy vulcanizer that DOES vulcanize — that does NOT burn the tire! Shrinks tire up-keep cost to almost nothing!

There, crammed into a few words, are the astonishing advantages offered to motorists by the Positive Steam Tire Vulcanizer. A vastly improved money-saving device that utilizes steam—the only scientific vulcanizing agent, and at instant notice gives you factory service at home.

Positive Steam Tire Vulcanizer

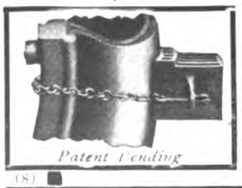
In Single Season Saves Owner Ten Times Cost

All you do is to apply raw gum rubber, clap on the steam vulcanizer, put water in one section, gasoline in the other, and touch a match. In 20 minutes time the job is done. Done so well, mind you, that the union of raw rubber and casing is as solid as the casing itself. Done without risk of ruining your tire by burning it (one of the dangers of the common fire-heated vulcanizers)—AND—done at a SAVING that in one season pays ten times over for the Steam Vulcanizer.

Get More Mileage Out of Junked Tires

That's what you can do. You can mend holes either in tube or casing up to 2½ inches in diameter with one setting. Reset for larger holes. Tires scrapped, can thus be brought to life for hundreds of miles of added service. Price complete $5.00.

DEALERS! Here's a live proposition! Get in touch with us at once if you want to handle a sure money-maker!



Drop a Card Today

You can't afford to pay big prices for those inevitable tire repairs. Here's ready relief! Utilize it. Send card today for complete information.

THE POSITIVE TIRE VULCANIZER CO.

418 Rock Island St. Davenport, Iowa

(8)

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THE FEDERATION OF TRADE PRESS ASSOCIATIONS IN THE UNITED STATES

Business Promotion Through Trade Press Efficiency

is to be the keynote of the most notable gathering of technical, class and trade journal editors and publishers ever held in America. No live manufacturer, sales manager, advertising man, trade paper editor or publisher can afford to overlook the

Eight Annual Convention of the Federation of Trade Press Associations in the United States at the Hotel Astor, New York, Sept. 18, 19, 20, 1913

Two sessions will be held daily. There will be editorial, circulation, advertising and publishing symposiums under competent leaders. Many of the leading editors, business managers, buyers and sellers of advertising, and authorities on modern merchandising methods will take part. On Friday afternoon, September 19, there will be a mass meeting with addresses by representative business and professional men, on subjects of timely interest to editors, publishers and advertisers. Distinguished guests and worth-while speakers will be at the annual banquet, which will be made a memorable social occasion. No matter what may be your connection with the trade journal field, if you are interested in the idea of business promotion through trade press efficiency, if you believe in business papers for business men, you will be welcome at all sessions.

Full information may be obtained from

The Committee of Arrangements

WM. H. UKERS, Chairman, 79 Wall Street, New York

The Federation of Trade Press Associations in the United States

President H. M. Swetland New York — Secy.-Treas. Edwin C. Johnston New York — Vice-President E. C. Hole Chicago



Saved!

Weed Tire Chains enable you to safely make sharp turns and quick stops when a momentary loss of control means loss of life.

The above picture illustrates one of the numerous situations in which you may be placed during bad road weather — when suddenly someone appears directly in your path and in a fraction of a second you must make a sharp turn and apply the brakes. It is then you require a firm unfailing grip on the road which can only be obtained by equipping ***all*** tires with

Weed Anti-Skid Chains

The Only Device that Absolutely Prevents Skidding

The memory of one accident deters future enjoyment in the use of a car. Why run the risk of such accidents and why forfeit the pleasures of motoring ***forever after, when safety can surely be yours by equipping all four tires with WEED CHAINS?***

WEED CHAINS cannot injure tires because "they creep." Easily put on in a jiffy without the use of a jack or other tools. Directions packed with every pair.

Universally Used

WEED CHAINS are generally regarded as the most profitable accessory for the automobile Dealer — Extensively Advertised — Easily Handled — Quick Sellers — No Dead Stock — No Dull Seasons — Liberal Profits — Satisfaction Guaranteed.

Attractive, Decorative, Convincing Hangers regularly supplied to Dealers upon request

At all dealers selling Auto Supplies

Weed Chain Tire Grip Co., New York

Manufactured in Canada by

DOMINION CHAIN CO., Limited, 137 McGill St., Montreal, Can.

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75% of all tire trouble is due to under inflation

THERE is no method yet discovered of ascertaining the pressure in the inside of a tire, except by the use of a pressure gauge. A casing containing 40 pounds of air looks and feels exactly like a casing containing 80 pounds. If your tires require 80 pounds and you only give them 40, they're on the quick road to the scrap-heap.

USE A

SCHRADER

Universal Tire Pressure Gauge

and Save Your Tires

Price, $1.00

For Sale by

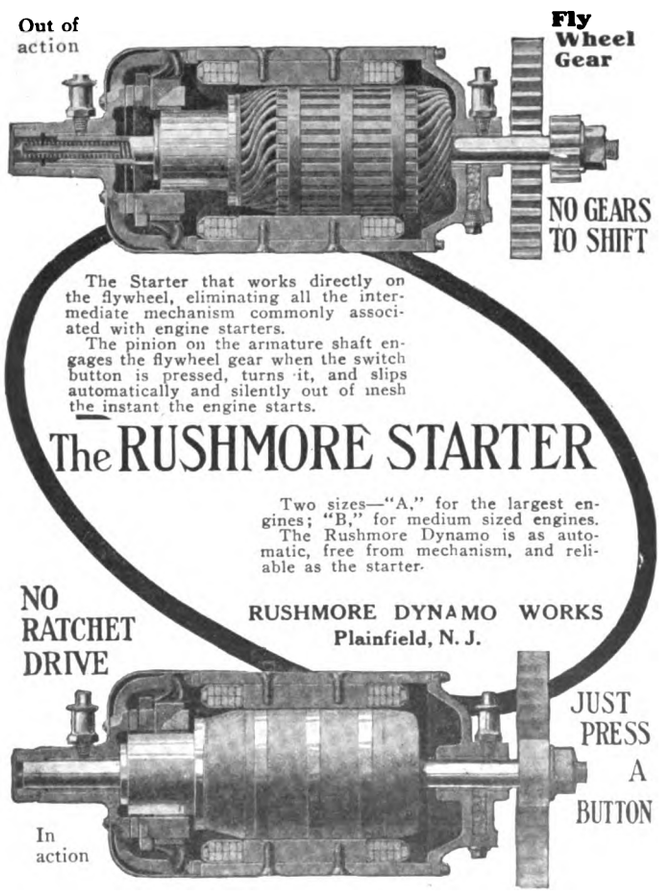
A. SCHRADER'S SON, Inc.

32 Rose Street, New York

The Hollenden Hotel.

SUPERIOR AVE. Cleveland EAST 6TH STREET

European Plan
800 Rooms
Rate 2 to 5 Dollars.
Home of
Cleveland Automobile Club.
Touring Information



The Starter that works directly on the flywheel, eliminating all the intermediate mechanism commonly associated with engine starters.

The pinion on the armature shaft engages the flywheel gear when the switch button is pressed, turns it, and slips automatically and silently out of mesh the instant the engine starts.

The RUSHMORE STARTER

Two sizes—"A," for the largest engines; "B," for medium sized engines. The Rushmore Dynamo is as automatic, free from mechanism, and reliable as the starter.

NO RATCHET DRIVE

RUSHMORE DYNAMO WORKS
Plainfield, N. J.

JUST PRESS A BUTTON

KLINE KAR

"FORTY" $1985

The best four-cylinder forty horsepower car on the market with separate electric starting and lighting, and separate ignition systems. The economical four speed forward transmission is another big asset.

Address Dept. W for Catalog

KLINE MOTOR CAR CORPORATION

Richmond, Va. **York, Pa.**

Main Office and Factory, Richmond, Va.

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Dixon's GRAPHITE TRANSMISSION GREASE NO. 677

This exactly right combination of grease and fine flake graphite is the most economical transmission and differential lubricant a car owner can buy, because it has the lasting quality which no other oil or grease affords. The fine flake graphite imparts this permanent quality, identifying itself with the metal of gears and bearings in an almost frictionless veneer that minimizes wear and noise. "Lubricating the Motor," No. 23, will solve your bearing problems.

Made in JERSEY CITY, N. J., by the

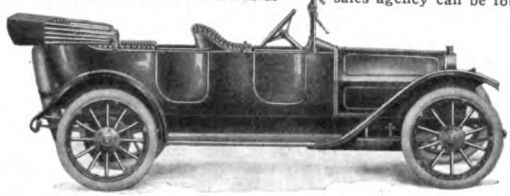
JOSEPH DIXON CRUCIBLE CO.

Established 1827

OhiO

OhiO 4-50 **Price $1750**

The OhiO Line for 1914 is the strongest you can get. 35 and 50 Horsepower "Fours"—60 and 80 Horsepower "Sixes." The sturdy construction and superb performance of each car in the OhiO Line are unequalled in any American car. At OhiO prices, no better foundation for a successful sales agency can be found.



Electric self-cranking and lighting, Full Floating Rear Axle, Left Drive and Centre Control, Multiple Disc Clutch, Warner Speedometer, Mohair Top, Rain Vision Windshield, Demountable Rims (one extra), Metal Bodies, 10-in. Upholstery, full equipment of tools, etc.

4-35	5 Passenger	$1275
4-50	5 Passenger	$1750
6-60	5 Passenger	$1585
6-80	7 Passenger	$2485

The Crescent Motor Co.
Cincinnati, Ohio.

Cooperative Dealer Agreement Most Liberal Ever Offered

NoRisko

Steering Gear & Ignition Lock



INVESTIGATE THE NORISKO

before your customer's car is stolen. Every motor car owner needs constant and complete protection against the thief and the joy-rider. This is afforded only by the

NoRisko

Price $7.75

Single Type (Steering Gear Only) Price $6.00

The only device made that actually locks the car.

DEALERS: Do you realize that every motorist that enters your place is a probable NORISKO purchaser? Write for full information concerning our "no-risk" plan for the trade.

C. J. ROGERS MANUFACTURING COMPANY

701 Abbott Building, Corner Broad and Race Streets, Philadelphia

Branch Distributors, Auto Specialty Sales Co., U. S. Rubber Bldg., 58th and Broadway, New York.



MONDEX

Shock Preventer

A scientific, mechanical triumph. NOT FRICTION but graduated resistance of rubber discs according to road conditions. Made in sizes to fit any car.

They are being rapidly adopted by car builders as standard equipment and by car buyers everywhere. *Ask us to prove this.*

If you are interested in eliminating bouncing and saving tire and repair bills, write today for Booklet "W."

THE ARISTOS CO., 250 W. 54th St., N. Y. Send for free sample Mondex Polish

Look to your Tires

YOU can take a *thousand miles of service* out of a set of tires by driving them insufficiently inflated over *ten miles of road.*

The New Positive Lock Stop Twitchell Air Gauge

Insures vou against premature wearing out of tires.

Itis TIRE INSURANCE FOR ONE DOLLAR



For Sale by Jobbers, Dealers, Garages or

The Twitchell Gauge Company

1202 Michigan Avenue **CHICAGO**

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SHELDON

AXLES AND SPRINGS ARE INVINCIBLE

THE SHELDON AXLE COMPANY
WILKES-BARRE, PA.

CHICAGO OFFICE:
68 East 12th Street

DETROIT OFFICE:
1215 Woodward Ave.

Read Pages 42 and 43 of Motor World Issue of Aug. 28

This announcement is of importance to manufacturers and dealers alike—especially if ***service*** is a part of your sales policy. Write for further particulars to

G. A. HENDRICKS Grand Rapids Michigan

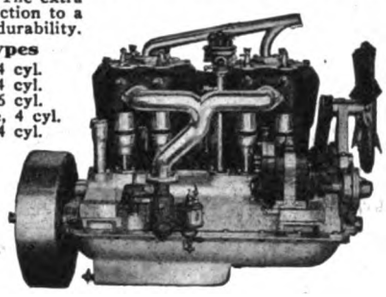
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250 West Fifty-fourth
SOLE IMPORTERS
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Jackson

NO HILL TOO STEEP
NO SAND TOO DEEP

Olympic	"four" Five passenger.	$1500
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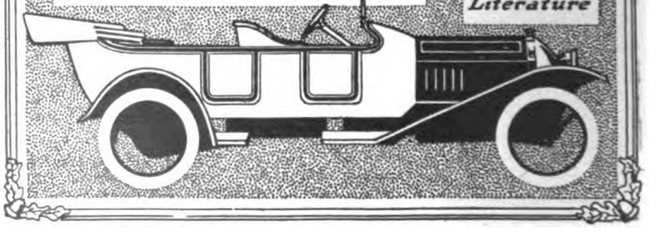
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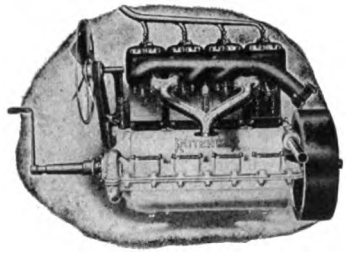
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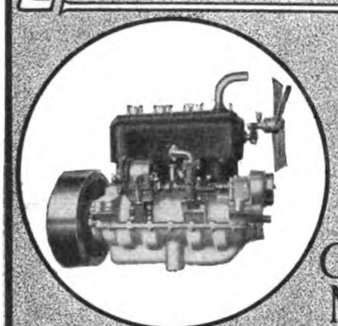
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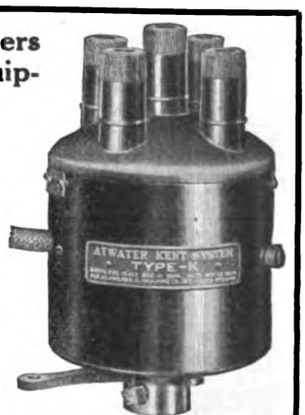
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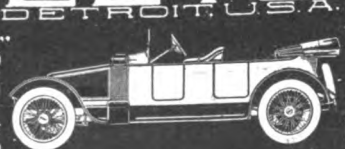
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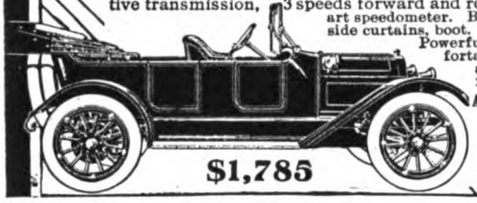
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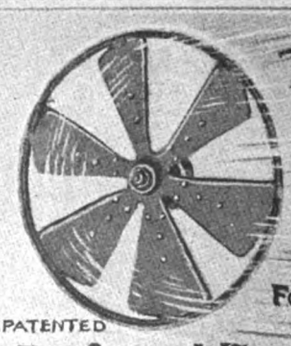
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Water-proof case mortises into pillar, ⅝ in. x 1⅝ in. x 1¾ in. deep.
Clearance in opening, 11-16 inches.



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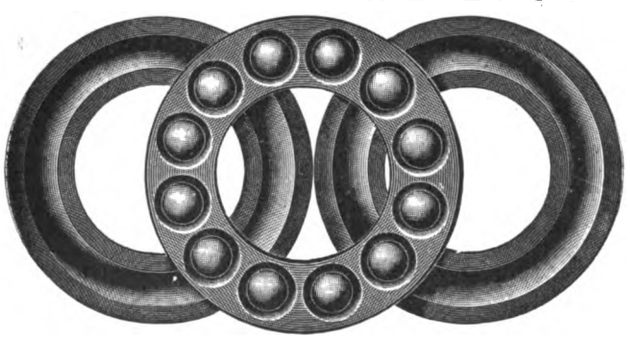
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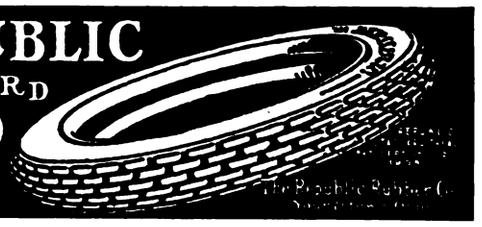
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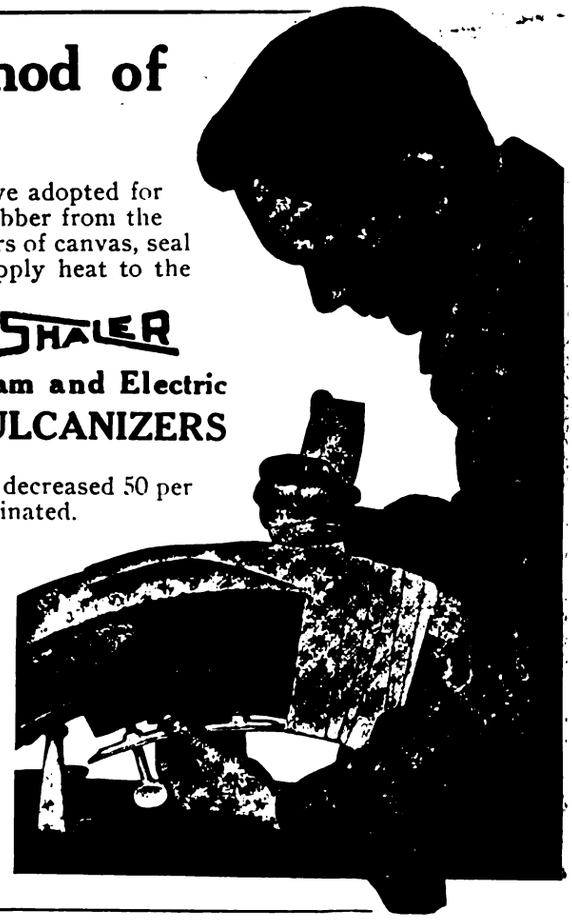
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Train your car to keep the road. There is just the same difference between driving a car equipped with a Safety Steerer and one that is not, that there is between driving a well trained carriage horse and an awkward colt. Tried and tested for two seasons. Increases the safety of driving 100%. Influence of steerer automatically decreases on corners. Easily attached. Special adjustable Ford steerer, full nickel plated, $10.00. Privilege of return if not satisfactory after ten days' trial. 55% discount on first and succeeding orders if yours is the first order from your locality. T. S. HARRIS, Waverly, Ill. Div. A.

HOW to time automobile, air ship and motorcycle motors, correct, simple, postpaid 25c. J. C. GEHRING, Ft. Wayne, Ind.

DISTRICT SALESMAN, Reilly trained, wants a connection October 1st. Seven years automobile experience with large companies. A producer with references. Box 263, care Motor World.

PEERLESS AUTO BODY POLISH.

A brightener and restorer of life to all old varnished surfaces. Especially adapted for automobile bodies where the life of the varnish is worn out. THE COLUMBUS VARNISH CO., Columbus, Ohio.

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PEERLESS CYLINDER ENAMEL.

A black gloss finish not affected by grease, heat or gasoline. Keeps the engine clean and the metal parts from rusting. THE COLUMBUS VARNISH CO., Columbus, Ohio.

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ARE YOU in need of any additional help in any department of your business? Are you out of employment or looking for a better connection? Have you second-hand apparatus of any kind or do you want to buy second-hand material? Have you a factory site for sale or do you want to buy one? If so, use the Want and For Sale column of the Motor World. Seven words to the line, fifteen cents a line. Advertisements can be inserted over a number when it is desired and identity of the advertiser will be kept confidential.

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For brass, nickel or iron. Bakes to a high gloss finish that will not crack, chip or peel. Solid covering one coat, without a primer or undercoat. THE COLUMBUS VARNISH CO., Columbus, Ohio.

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Quality Windshields
Auxiliary Seats, Bumpers and Gas Starters
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METZ "22" ROADSTER $475
The "gearless car"—no clutch to slip, no gears to strip—completely equipped, fully guaranteed. 4-cylinder, 22½ H.P. water-cooled motor, Bosch magneto, artillery wheels, best quality clincher tires. Makes 5 to 50 miles per hour, 28 to 32 miles on 1 gallon of gasoline. Great hill climber. You can secure EXCLUSIVE SALE in your territory. Write for Book "B."
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Famous for Their Durability
BARTHEL & DALY, 42 Broadway, New York



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This name on Automobile Tires and Rubber Accessories signifies inherent qualities of material and workmanship that insure the maximum of service at the minimum of expense. (673)
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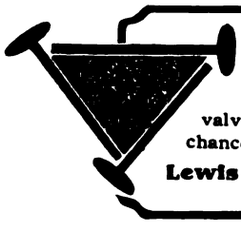
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JENCICK MOTORS For Motor Trucks
from base to spark plug, have features that are "Different and Better."
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For Pleasure Cars and Light Delivery Cars
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A—Shows *double*, notched treads.
B—Shows undercut sides.
C—Shows slantwise bridges.
D—Shows absorbing means when passing over an obstruction.
The Motz Tire and Rubber Co.
Executive Office: Akron, Ohio
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"A Giant in Power —A Miser in Fuel"
25% to 50% more mileage
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Lewis Electric Welding & Mfg. Co.
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"American Made"
NOW READY FOR THE TRADE
Highest Efficiency—Good Service Guaranteed
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DEALERS! It is EASIER to sell a GOOD spark plug pump than a poor one, and the sale sticks. Better still, YOUR PROFIT is a couple of dollars MORE. Let us show you why the "National" is MUCH BETTER, and how we help you sell them. Write for special dealer's proposition today, and get your share of the profits.
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NATIONAL MOTOR SUPPLY CO., 5601 Euclid Avenue, Cleveland, Ohio

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will help you increase your business while benefitting your customers. We will send any responsible dealer a pair on 30 days' trial. Write now. Good Agents wanted for unoccupied territory.
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You get more air-room in Diamond (No-Clinch) Tires -and it's the extra air-room that does the work

THE more air-room — the more resiliency, which in turn means more comfort for you and your passengers — *more service from your tires.*

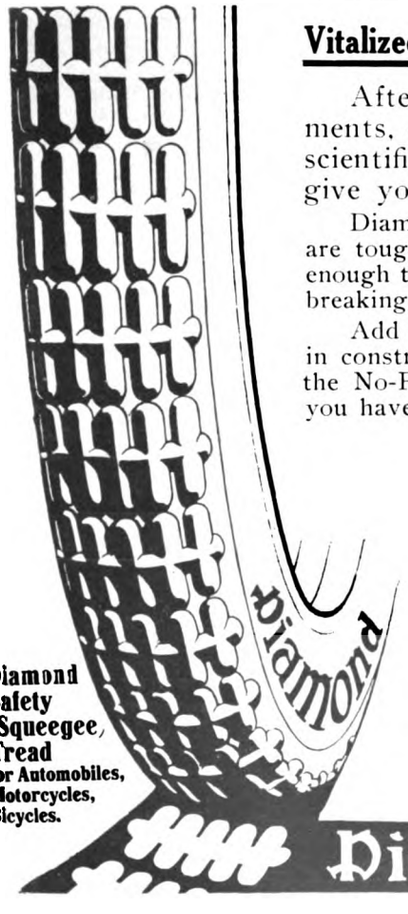
The secret of building a tire that lasts means building a tire that does the work easily—a tire that does not strain under road usage.

This extra air-room is gained for you without lessening the thickness of the tread or weakening the side walls in any way.

To stand the pull of the engine—to absorb the shocks of the road—to travel farthest on the smallest quantity of gasoline—to make inner tubes last longer, were scientific tire problems.

Our engineers have solved these problems for you and all other tire bills payers by building Diamond (No-Clinch) Tires with extra air-room—in a word—the ideal, perfectly constructed tire you have been demanding.

Diamond {No Clinch} Tires



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Vitalized Rubber calls a halt on "Short Mileage"

After countless laboratory tests and experiments, our chemists have discovered a process to scientifically toughen pure rubber so that it will give you the mileage you pay for.

Diamond (No-Clinch) Tires made of Vitalized Rubber are tough and flint-like enough to fight the road, elastic enough to absorb shocks, thus preventing rim troubles and breaking above the bead.

Add to this high grade workmanship, nothing inferior in construction or fabric—Perfect 3-Point Rim Contact—the No-Pinch Safety Flap for inner tube protection—and you have the best tire money can buy.



Cross Section of Diamond Safety Tread Tire

Safety (Squeegee) Tread an additional Diamond advantage

Diamond Safety Tread Tires obey your will. No matter how slippery and treacherous the paving, they grip and hold. You drive with safety and you drive with pleasure with Diamond Safety (Squeegee) Tires on your cars.

And that's not all—there's real economy in Diamond Safety Tread Tires. The Safety Tread is added to the regular tread—the extra mileage makes the safety cost you nothing.

So this time buy Diamond Vitalized Rubber Tires—you can get them to fit your rims from

Diamond Dealers Everywhere

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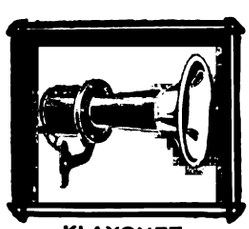
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Car manufacturers who claim to make high-grade cars must of necessity equip with the Klaxon. They cannot afford to let the few dollars difference in the cost between the Klaxon, Klaxonet or Klaxet and signals of unknown make stand between them and their reputation.

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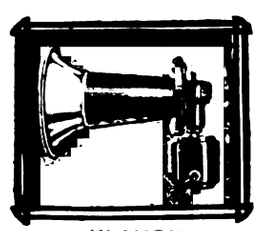


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Lovell-McConnell Mfg Company Newark, N.J., U.S.A.

KLAXON

"The Public Safety Signal"



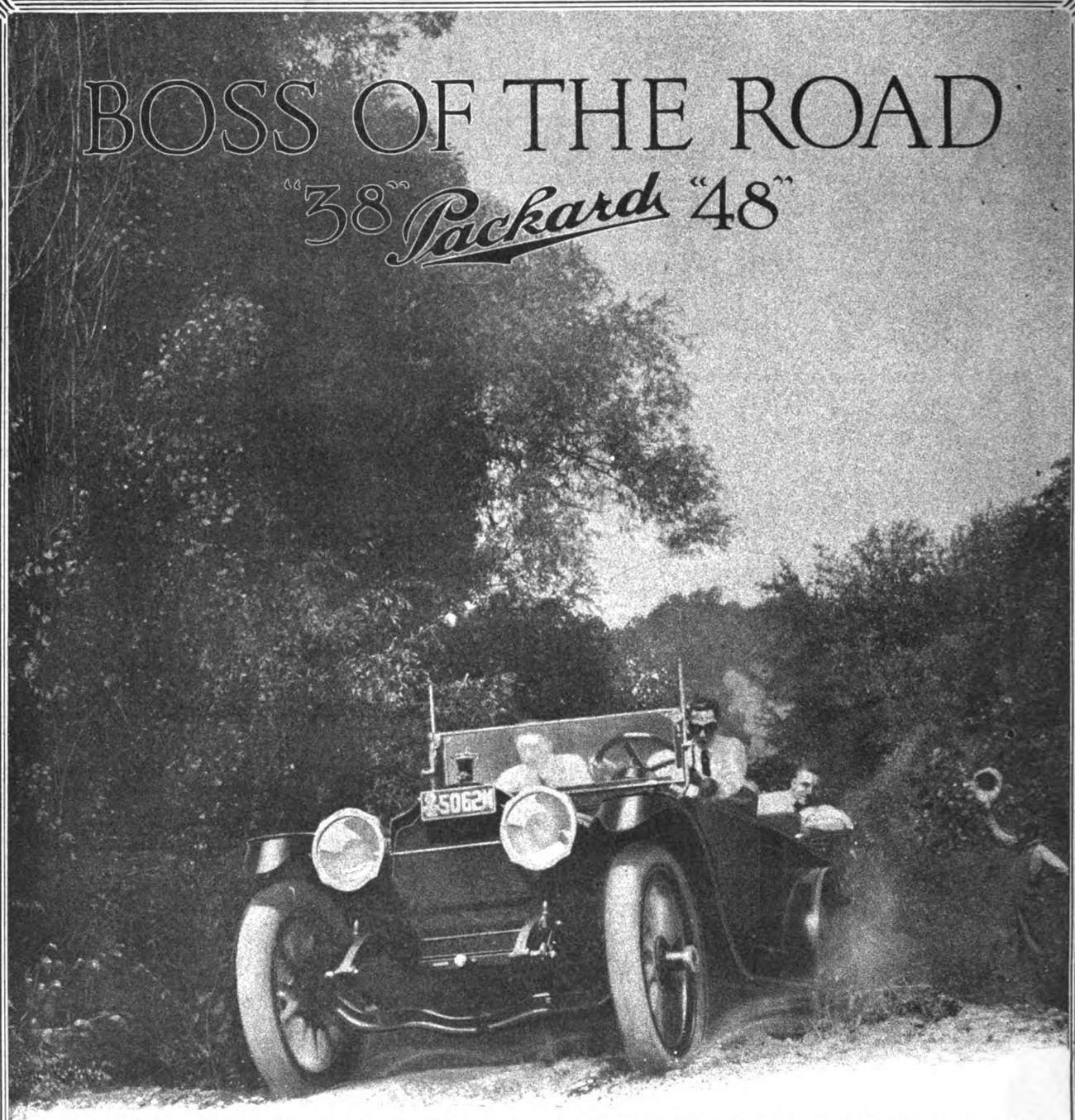
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Type Composition of this advertisement done in the Klaxon Factory with "Klaxon" type especially designed by F. W. Goudy

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"38" Packard "48"



PROWESS—From Chicago to Detroit, 284 miles, in seven hours and nine minutes is the record of the Packard "38"—an average of 40 miles an hour. This rough road performance has never been equalled. The Packard has more speed than you can use.

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Ask the man who owns one

PACKARD MOTOR CAR COMPANY · DETROIT

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MOTOR WORLD

A Trade Paper Giving the World's Motor News

Vol. XXXVI No. 13 — New York, September 18, 1913 — Ten cents a copy Two dollars a year

BERRY BROTHERS' VARNISHES

TRADE LIONOIL MARK

BERRY BROTHERS' VARNISHES

Protect Metal Parts Against Rust by Using Berry Brothers "Lionoil"

To insure perfect finish on metal bodies, it is absolutely essential that the surface be free from rust. "Lionoil" is the world's best rust preventive.

Bodies coated with "Lionoil," when finished and in service, show no tendency to peel, check or flake off. These faults are almost always due to rust spots on the metal.

Springs, axles, frames, fenders, lamps and all sorts of metal stamping and forgings are insured against rust if coated with "Lionoil."

"Lionoil" is used by many manufacturers as the liquid ingredient for metal body primer. We can also furnish you "Lionoil" metal primer ready mixed.

"Lionoil" is inexpensive to buy, covers lots of surface, air-dries quickly. It pays for itself in labor saved and metal preserved.

Send for full information regarding "Lionoil."

We also make the Raven line of black Japans for lamps, hoods, top bows and other parts.
Let our Technical Department help you with your finishing problems. Write for booklet and full information.

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(Incorporated)

Largest Manufacturers of Varnishes and Japans in the World

FACTORIES: Detroit, Mich., and Walkerville, Ont.

BRANCHES: New York, Boston, Philadelphia, Baltimore, Chicago, Cincinnati, St. Louis, San Francisco, London, England

Published Weekly by the Motor World Publishing Company, 1600 Broadway, New York

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Truffault-Hartford Shock Absorbers Would Have Prevented This—

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Description of the American Automobile Association's Reliability Tour from Indianapolis to Glacier Park.

—Motor World, July 17, 1913.

Have you received a catalogue on the new Automatic Type Shock Absorber?

HARTFORD SUSPENSION COMPANY

EDWARD V. HARTFORD, Pres.

142 Bay Street, Jersey City, N. J.

BRANCHES

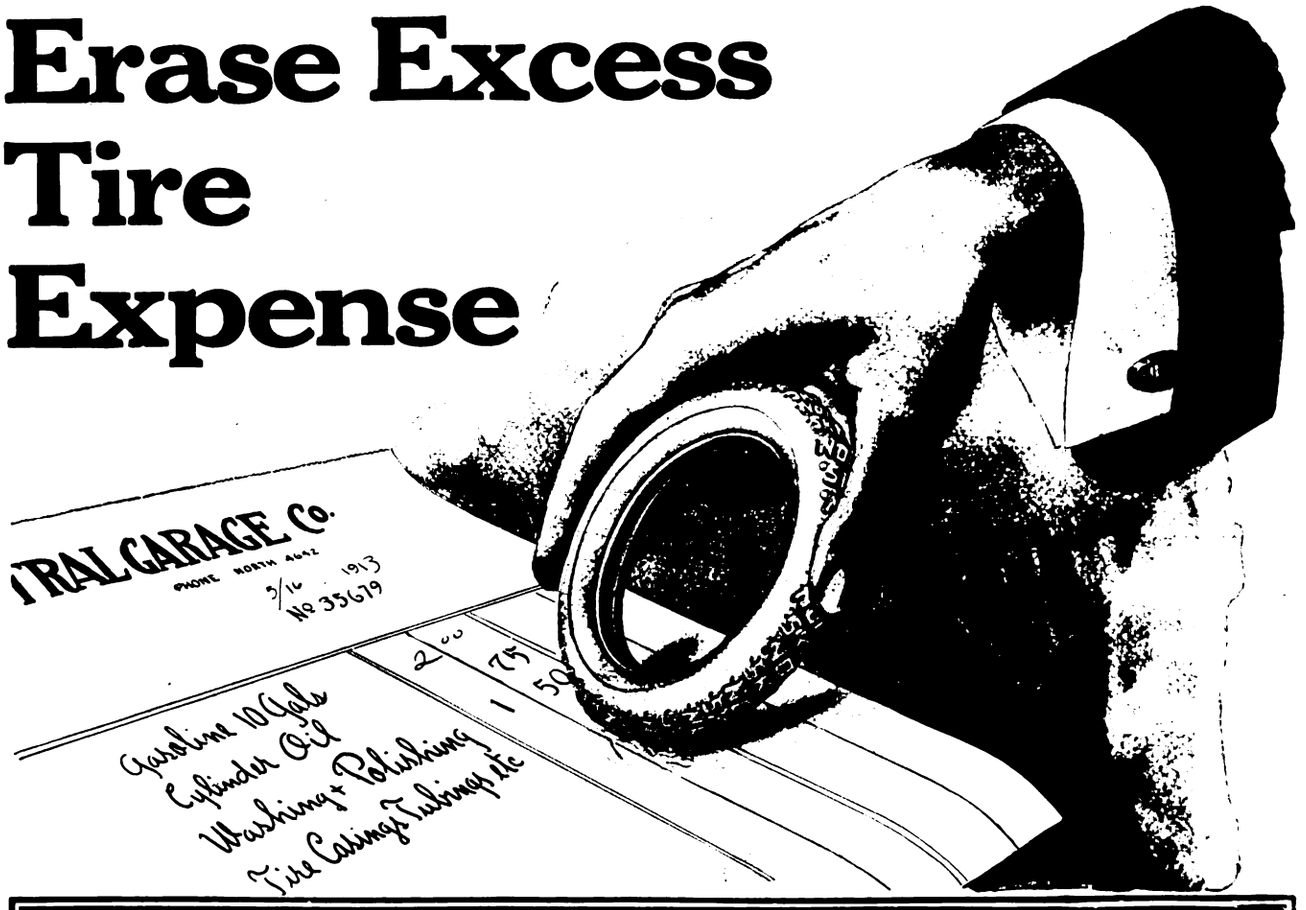
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Erase Excess Tire Expense



THE monthly garage bill is a pretty good barometer of tire efficiency. Gasoline, lubricants and small adjustments are necessities. You can't expect to reduce them materially. But tires are different—you can economize in this direction and you should.

Firestone Non-Skid Tires are today erasing a big proportion of garage bills for experienced motorists everywhere. Charges for patching, vulcanising, and retreading are being reduced or eliminated entirely.

You motorists who have never tried Firestone Non-Skid Tires should ask for a copy of "What's What in Tires" by H. S. Firestone, a book by a tire authority written from the motorist's standpoint. Write for it.

Firestone pneumatic tires are guaranteed when filled with air at the recommended pressure and attached to rims bearing either one or both of these inspection stamps. When filled with any substitute for air or attached to any other rims than those specified our guarantee is withdrawn.

THE FIRESTONE TIRE AND RUBBER COMPANY

"America's Largest Exclusive Tire and Rim Makers"

AKRON, OHIO **Branches in All Large Cities**

Firestone

Non-Skid and Smooth Tread Tires

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A Pair of Handy Workers



B. & S. Auto Tools meet in all respects the requirements of the motorist. Swift and sure of adjustment. Convenient, easy of action and everlastingly durable. The triangle trade-mark stamped on all.

Billings & Spencer Tools

"The tools that are guaranteed"



is a guarantee of a life of maximum service and highest tool-efficiency. Drop-forged from best bar steel, scientifically treated, rigidly inspected. B. & S. Tools for more than 40 years have maintained the highest standard of tool quality. The millions now in use are evidence of their popularity.

Write for catalog and prices

The Billings & Spencer Co.
Hartford, Conn.

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¶ Any oil manufacturer can pick out one particular physical or chemical test that applies to his own oil and then hang his entire advertising story on the merits of the product because of its one feature.

¶ But we have always believed that a combination of all the best tests is really what is desired in an automobile oil and in

MONOGRAM OIL

one will find those features and tests which give real RESULTS and SERVICE and in the end these are the points which really count.

NEW YORK LUBRICATING OIL CO.
Consolidated with
Columbia Lubricants Co. of N. Y.
116 Broad Street, New York City

BRANCHES AT NEWARK, BOSTON, CHICAGO, CLEVELAND, PHILADELPHIA, SEATTLE, SAN FRANCISCO, LOS ANGELES, SPOKANE, LONDON, ENGLAND; JOHANNESBURG, SO. AFRICA

Established During 1885

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Overland 1914

$950

With Gray & Davis electric starter and generator—$1075
Prices f. o. b. Toledo

VISIBLE values produce the greatest confidence in the new 1914 Overland. No need for adjectives; no need for superlatives.

And the Overland dealer has *automatic* arguments—tangible, concrete and convincing.

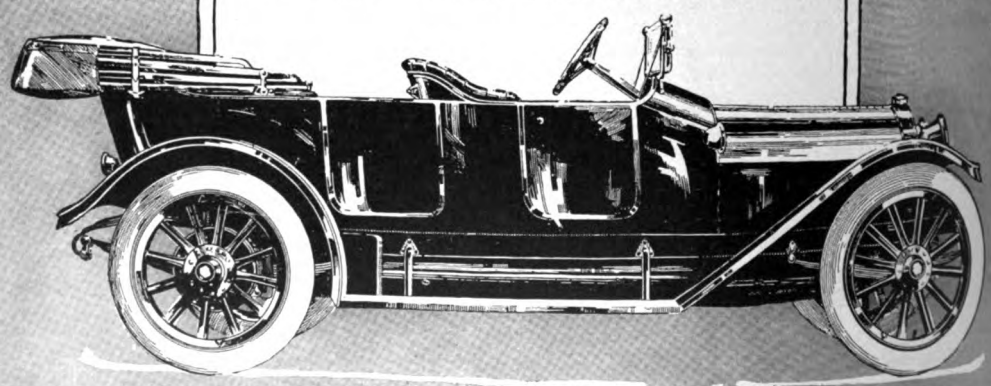
Catalogue on request. Please address Dept. 50

The Willys-Overland Co.
Toledo, Ohio

Full electric lights
Storage battery
35 horsepower motor
114-inch wheelbase
Timken bearings

33 x 4 Q. D. tires
Clear vision windshield
Brewster green body
with light green striping,
nickel and aluminum trimmings

Mohair top curtains
and boot
Stewart
speedometer
Electric horn



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MOTOR WORLD

Vol. XXXVI New York, U. S. A., Thursday, September 18, 1913 No. 13

PETROLEUM SOCIETY FORMED TO LOOK INTO OIL INDUSTRY

Proposed to Eliminate Much Waste by Study of Production Methods —Officers Elected—Congress Two Years Hence.

Crowning the efforts of the past seven years to bring together the men interested in the petroleum industry, the American Petroleum Society at length has become a reality; it came formally into being last week at the Experiment Station of the United States Bureau of Mines at Pittsburgh, Pa., when the following officers were elected:

President, C. D. Chamberlain of the National Petroleum Association, Cleveland, O.; vice-president, R. Galbraith of the Independent Oil & Gas Producers' Association. Tulsa, Okla.; secretary, Dr. Irving C. Allen, U. S. Bureau of Mines, Pittsburgh, Pa.; treasurer, Warren C. Platt of the Independent Petroleum Marketers' Association, Cleveland, O.; acting past president, Frank B. Fretter of the Western Petroleum Refiners' Association, Coffeyville, Kan. In addition, the following members were elected to serve on the executive committee: Ralph Arnold, Los Angeles, Cal.; C. F. Clarkson, S. A. E., New York City; G. M. Swindell, Chamber of Mines and Oil, Los Angeles; Edmund O'Neill, University of California, Berkeley, Cal.; E. B. Rich, Gasolene Producers' Association, Parkersburg, W. Va.; George H. Taber, Gulf Refining Co., Pittsburgh, Pa.

It is the purpose of the society, as outlined at a preliminary meeting held August 1, at which some 18 national societies were represented, to study closely every phase of the natural gas and petroleum industry, including origin, statistics, conservation, drilling methods, production, transportation, storage, refining and specification for refined products, and it is hoped that as a result of such study it may be found possible to reduce some of the enormous waste which at present is going on for want of proper information.

It is anticipated that the first annual meeting will be held at some convenient place in the United States during the spring of 1914, and it is planned to hold the second annual meeting in connection with the Panama-Pacific Exposition in San Francisco in 1915. Invitations have been sent to the International Petroleum Commission, which meets in January, 1914, in Bucharest, Roumania, to hold its next meeting in conjunction with the 1915 meeting of the American society, and it is hoped to turn the two meetings into a great congress of petroleum technologists and scientists from all over the world.

Alco Plant Not Yet Disposed of.

Reports printed in Providence, to the effect that W. H. Draper and Michael W. Norton, of that city, are interested in a project to take over the automobile department of the American Locomotive Co., are authoritatively denied. All that Norton and Draper have done has been to purchase 26 Alco trucks. The Alco plant in Providence is still making up the stock on hand and when the work is completed the plant proper will be disposed of to best advantage. Those in position to know say that several "nibbles" already have been received but none of them has yet reached the dignity of being included in the term negotiations.

Swinehart Involved in Rubber Deal.

John Z. Lowe, Jr., William A. DeLong and Joseph W. Harriman, trustees in bankruptcy of the New York Commercial Co., a crude rubber dealer, have filed suit in the Supreme Court for New York county against the Swinehart Tire & Rubber Co., of Akron, Ohio, for $22,362.67 and this week were granted an attachment for that sum; the complaint states that rubber to this value was contracted for by the Cuyahoga Rubber Co. of Akron, and that the Swinehart company guaranteed the account.

GEORGE W. BENNETT DEAD; SUCCUMBS TO OPERATION

Appendicitis Carries Off Willys's Chief Lieutenant at Height of His Career — One of Strong Men of the Industry.

George W. Bennett, general manager of the Willys-Overland Co. and of John N. Willys's other interests, died at his home in Toledo yesterday (Wednesday) afternoon, as a result of an operation for appendicitis performed the previous Friday. He rallied from the operation fairly well, but Wednesday morning his condition took such an alarming turn that Dr. Crile, of Cleveland, one of the most eminent appendicitis specialists in the country, was summoned to Toledo, and made the journey by special train which averaged better than a mile a minute. He arrived too late to be of service, however, as Bennett expired soon after the specialist reached Toledo.

Bennett so long has been one of the conspicuous strong men of the industry, and as it was not generallly known that he had undergone the operation, the news of his death proved a profound and widespread shock. The sad news awaited John N. Willys when he arrived in New York yesterday, after several months stay in Europe. He was so deeply moved that he immediately retired to the Hotel Plaza in an effort to regain his composure.

Bennett's loss is no ordinary loss, and as Willys had vested him with almost complete power in the actual conduct of his business, his passing will be felt. He is survived by his widow and two boys, both of whom are in their teens.

Like so many of those engaged in the automobile business, Bennett was a graduate of the bicycle trade, which he entered in the late 80's as a traveling salesman for the Gormully & Jeffery Mfg. Co., of Chicago, which manufactured Rambler bicycles. Like Messrs. Gormully and Jeffery

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themselves, Bennett was of British birth, but he had resided so long in this country as to appear almost to the manor born.

His first promotion was to the management of the Gormully & Jeffery branch in Washington, D. C., and when the Gormully & Jeffery property was taken over by the $80,000,000 American Bicycle Co.—the so-called "bicycle trust"—Bennett went with it and ultimately became one of the district managers of the big corporation. Before it failed, in 1900, Thomas B. Jeffery had acquired one of the trust's bicycle plants in Kenosha, Wis., which was the foundation of the present Rambler automobile plant, and Bennett rejoined the Jeffery retinue, becoming sales manager of the Jeffery company. He played a large part in building it up, but his business surroundings becoming unhappy, he resigned his position and became sales manager of the original Knox Automobile Co., in Springfield, Mass. He had been receiving a salary of five figures and it is no secret that Mr. Jeffery offered him an uncommonly handsome increase in order to retain his services, but, with that determination which was his characteristic, Bennett declined the offer, declaring that peace of mind was worth more than money, and accepted the Knox berth, which paid him $10,000 or $15,000 less. He also invested all of his savings in the Knox company and lost them when the company failed.

Leaving Knox in 1907, he became manager of the White Co.'s branch in New York, which office he held until June, 1910, when he attracted the notice of John N. Willys, one of his old friends in the bicycle trade. He quickly proved the sort of man that Willys desired and required. He was short of stature, but square jawed, square shouldered and powerfully built, his very appearance suggesting the power and positiveness which were two of his virtues, which for the first time he was permitted to exercise to the full and thus demonstrate his full value.

First serving chiefly as sales manager, Bennett's scope was gradually increased until, about a year ago, he became practically general manager of the Willys interests. He was elected vice-president of the Willys-Overland Co., and only two or three months since he was made general manager in name as well as in fact, Willys gradually devoting himself chiefly to his financial affairs, and absenting himself from the factory for months at a time, leaving in Bennett's hands practically the entire conduct and control of his automobile business. The marvelous growth of the business during the last three years is striking tribute to Bennett's energy, judgment and ability.

At the time of his death he was one of if not the most highly salaried men in the

(Continued on page 14.)

FRANKLIN LOWERS PRICE; WILL BUILD A "SIX" ONLY

"Little Six" Only Model Remaining in Line—Price of Touring Car $600 Less—Changes Include Left Drive and Center Control.

Although it became known some time ago, as was stated in Motor World, that the H. H. Franklin Mfg. Co., of Syracuse, N. Y., planned to discontinue "fours" and to concentrate on "sixes," the extent of the changes contemplated by the company did not become known until this week, when a new series of cars was brought out. Now it can be stated that not only is the company concentrating on "sixes" but on "a six," the Model M or the "little six" constituting the entire line, and prices have been generously pared insofar as it is possible to make comparisons with preceding models. Also, all cars have left drive and center control—a new construction.

The "little six" which now constitutes the line is much different from the car which occupied that position in previous production, and the only real comparison possible—that between the past and present five-passenger touring cars—shows the new "six" to be $600 less than the former model; the new price is $2,300, the old $2,900. Also, the weight has been cut; where it was 2,990 pounds it now is but 2,700 for this model.

For variety in style the single chassis mounts six different styles of body—five-passenger touring car, roadster, coupe, sedan, limousine and Berlin limousine. No seven-passenger car is included in the new line. The wheelbase of the new chassis is 120 inches, where that of the former "little six" was 116 inches.

The air cooling system which has marked every Franklin ever built is retained, but the mechanical changes are many; the car may be said to be "new from the ground up." The air jackets and flanges are now brightly nickled and all parts below the engine deck are black enameled, giving the motor an attractive appearance. The timing and magneto gears, formerly encased in the rear cheek piece, have been placed, with the silent chain of the Entz starter drive, in a cheek piece at the front where they are easily accessible by the removal of a plate.

Instead of a single I-beam support for the valves, extending across the tops of the cylinders but not attached to them, each pair of rocker arms works upon an individual support which is attached to the cylinder, making possible easier and more accurate timing. Ignition is now furnished by an Eisemann magneto in place of the equipment which had been used for a number of years. The bore remains 3⅝ inches and the stroke 4.

Throughout the mechanical part of the car numerous changes have been made for the attainment of simplicity and convenience. The switch box, formerly on the hood board, reposes between the front seats and the hot and cold air control of the carburetter has been moved from the engine to the dash. A Corbin-Brown speedometer is a difference in equipment. Headlight dimmers are included. The running board has been cleared of the tool box. Spare tires are not a problem for Franklin designers, since they are not carried.

An entirely new rear axle, of bevel drive as heretofore, has been incorporated, possessing a removable cover which affords easy access to the differential gears. The sloping hood has been refined in the direction of greater beauty and several of the models presented are new creations.

The roadster will carry three passengers in an emergency, but instead of a disappearing rumble seat the extra accommodation is found in a folding seat in front of the regular seat. The coupe is a new type and seats three on the regular seat with provision for one extra passenger. The sedan, a new type, will carry three on the rear seat; the driving seat is fixed and has beside it a movable Pullman seat. Entrance is by one door only. The limousine, with open compartment for the driver, had more or less of a counterpart in the preceding series but the Berlin model is new.

Treads are 56 inches; horsepower is 30. The full-elliptic springs, laminated wood sills and light-weight aluminum construction are retained. The prices are: Touring, $2,300; roadster, $2,300; coupe, $2,950; sedan, $3,200; limousine, $3,300; Berlin limousine, $3,400.

Georgia Sees Another Tire Plant Coming.

Despite the fact that for one reason or another tire manufacturing enterprises have not prospered in the South, Augusta, Ga., sees a tire plant coming its way. It will be operated under the style Southern Tire & Rubber Co., of which Weems A. Smith is president, H. S. Dunbar vice-president, and James P. Armstrong, secretary and treasurer. It is stated that "2,000 automobile owners have been secured as stockholders, all having agreed to purchase their supplies from the company."

To Make Bearings and Worms in Toledo.

For the purpose of making bearings and worm gears for automobiles, the Bock Bearing Co. has been organized in Toledo with W. E. Bock as its president. It has secured a factory site at Phillips avenue and Michigan Central Railroad, on which will be erected a one-story plant, 62 x 225 feet.

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GOBY MOTOR NOT LUBRICATED WITH STANDARD OIL WEALTH

Horse Journal's Great "Scoop" Suffers Swift Denial—"John D." Not Interested in Company Bearing Name Rockefeller.

Standard Oil entered the automobile industry on Saturday last; on Sunday, it turned around and walked right out again.

Of course, the big corporation really did not do anything of the sort, but some one spoofed the New York Times into printing a long front page story which made it so appear. Twenty-four hours later it published a complete if less conspicuous denial, but meanwhile those who recognize "Standard Oil" stories when they see them already had made liberal use of the salt cellar.

The basis for the whole story is that the Rockefeller Motor Co., which was incorporated last week under the laws of Ohio, with an authorized capital of $10.000, has or is about to take over the Goby Engine Co., and, it is intimated, may take over or in some way be linked with two automobile enterprises, one of which, apparently, will be a cyclecar company, which, although it has no real factory and no real output, has been the subject of fulsome reports in print under Cleveland date lines.

The name Rockefeller naturally suggested that John D. himself, or some of his intimates, were interested in the project; indeed, the Times's story declared that four of the five incorporators were attorneys who represented the interests of Standard Oil and John D. Rockefeller. Immediately these reports were spread broadcast, denials arose in Cleveland, where, it is stated, that instead of representing John D. Rockefeller or other Standard Oil interests, the four lawyers were merely junior partners in a law firm which has offices in the Rockefeller Building. The first incorporator was none other than Thomas J. Fay, one-time president of the Society of Automobile Engineers, who, during recent months, has been engaged in developing the Goby piston valve engine in Cleveland.

Fay once was editor of a New York automobile journal, but the Rockefeller-Goby story did not escape through a publication of that sort; instead, a horse paper, with which one of Fay's former editorial associates is identified, "scooped the world," or would have "scooped" it, had not the horse editor permitted the Times to share the great story.

Some two months ago Fay attracted notice to the Goby engine by printing a full-page advertisement in a New York daily paper, in which Cicero, Caesar and other historic figures were coupled with Goby and placed in a frame formed by an address delivered before the S. A. E. by Henry M. Leland, general manager of the Cadillac Motor Car Co. As a result, rumors promptly arose that the Cadillac people were making ready to adopt the Goby engine, and they were put to considerable pains to counteract such reports, as Motor World stated at the time. For some reason or other, Fay took such violent objection to Motor World's statement to that effect that he made known his purpose to institute suit for libel if grounds therefor could be found. No suit, however, has yet been filed.

On Saturday, when the New York Times published the Standard Oil story, Fay was in New York, but it was gravely stated that he had "secluded" himself in Brooklyn "to obtain quiet for the maturing of his plans," to quote the remark attributed to him. Of course, he did not reveal the plans, but is credited with admitting that the Rockefeller company "had been formed to take over other companies engaged in the making of automobile motors."

Claim Coventry Broke Dealer's Contract.

Claiming that the Coventry Chain Co., Ltd., of England, violated the contract whereby the Sarco Engineering Co., of New York City, was to act as American distributer of Coventry chains from November 30, 1912, to December 31, 1916, the Sarco company has brought suit against the Coventry concern in the Supreme Court for New York county. It asks damages and an injunction restraining Herbert F. L. Funke from acting as the Coventry agent, the claim being that the English manufacturer switched its business from the Sarco company to Funke August 1 last.

Klaxon Sues Two More Dealers.

For handling Chandler cars equipped with Sparton horns, the Brady-Murray Motors Corporation, of New York City, has been made defendant in a suit instituted by the Lovell-McConnell Mfg. Co., of Newark, N. J., for infringement of the Klaxon patent. For handling Hudson cars equipped with the same horn, which is claimed to infringe the Lovell-McConnell patents, the Louis Geyler Co., of Chicago, has been made defendant in a similar action.

Tainter to Direct British Monogram.

Louis S. Tainter, for several years advertising manager of the New York Lubricating Co., maker of Monogram oils, sailed to London yesterday to assume charge of the company's British business, which is conducted under the style British Monogram Oil Co. Before joining the Monogram staff, Tainter had been identified with the Havoline and Wolverine oil companies.

APPERSON FOLLOWS TREND TOWARD LEFT HAND DRIVE

Brings Out Three New Models, Each of Which, Also, Has Controls in Center of the Car—"Sixes" Now a Stock Product.

While previous Appersons have been of the conventional right-hand drive and control, the maker, the Apperson Bros. Automobile Co., of Kokomo, Ind., has followed the plainly indicated trend of the times, and in the cars which are now coming through, has adopted left-hand drive and center control. Three new models have been added and the line as it now stands contains but one right-hand driven and controlled car.

The production of stock "sixes" is also an innovation with the Apperson company, for while it previously built "sixes" only on special order, and therefore sold them at a rather high price, the new line includes a "big six" listing at $2,350 and a "little six" at $2,200. The "sixes" are classed at "6-55" and "6-45." A new "4-45" has been added and it, too, locates the driver at the left.

The smaller of the two is made in three types—five- and seven-passenger touring cars and a roadster. The latter lists at $2,300, $100 more than the other two. The power plant is a block motor, whereas previous "sixes" utilized singly-cast cylinders, and the bore and stroke are respectively 3¾ and 5½ inches. Wheelbases are 128 inches for touring models and 120 inches for the roadster. The equipment includes a Gray & Davis starting and lighting system, and the car is left-driven and center-controlled. The larger car has a more nearly square motor, measuring 4¼ by 5 inches. Both are of the T-head type.

Last year's line of Apperson cars included a "4-45" which sold for $1,600 and for $1,800 with a lighting and starting system. The same car this year, equipped with the Gray & Davis electric system, sells for $1,600, in a way a reduction of $200. This model retains right-hand drive and control.

The new "4-45," has a 120-inch wheelbase, unit power plant, carries five passengers and is in many respects similar to the other "four." It, however, has left drive and center control. It is electrically lighted and started, and lists at $1,785.

Michelin Reduces Plain Tread Prices.

Following the downward tendency in tire prices which had its effect recently in several quarters of the trade, the Michelin Tire Co., of Milltown, N. J., although it still retains its position of "a bit higher than the others," has reduced its figures; the cuts amount approximately to 10 per cent. on

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tubes and from 5 to 8 per cent. on casings. These reductions apply to plain treads only; the metric sizes and non-skid tires are largely made abroad and they are not affected by the reductions.

Illustrative of the changes which have been made, the 30 x 3-inch tube is now $4 where it was $4.50 and the corresponding tire has been reduced from $14.75 to $13.75. The 30 x 3½ tube is now $5, whereas it was $5.50, and the corresponding shoe is $20.50 instead of $21.50. In the 34 x 4 size the tubes are reduced from $8 to $7.25 and the tires from $33.25 to $30.75. Tubes in the 36 x 4½ size are $9.85 instead of $11, and for tires the price of $40 replaces $43.75.

Beebe Makes Partial Settlement.

John D. Beebe, former general manager of the bankrupt Midland Motor Co., of Moline, Ill., who was arrested in Chicago on a charge of embezzling the company's funds, and taken to Moline for trial, effected at least a temporary settlement and has been released.

It appears that last June the Merchants' and Mechanics' bank turned over to Beebe, for the Pope estate, four automobiles to be repaired and sold "to lessen the liabilities of the people most heavily affected by the bankruptcy," and advanced $1,000 with which to make the repairs. Later, it is said, Beebe shipped two of the cars to Minneapolis and two to Chicago.

After waiting a considerable time for a report in regard to the cars, an attorney was sent to Chicago to see Beebe, and it is said the latter refused to talk or to give up the bills of lading for the cars.

Beebe was not locked up, but he turned over the bills of lading for the cars and effected an incomplete settlement, paying all the costs and expenses, amounting, it is said, to about $9,000 in all.

Broker Selling Motor Wagon Assets.

A. C. Applebaum, a Detroit broker, is disposing of the assets of the bankrupt Motor Wagon Co. of Detroit, at private sale. When the property was put on the block by the receiver, the Union Trust Co., the best bid received was $3,250, but as the material on hand was appraised at $40,000, the court promptly rejected it. The receiver then disposed of $4,000 worth of the stock and, with the consent of the court, entered into an arrangement with Applebaum, whereby the latter agrees to dispose of the remaining assets of an commission basis. He will endeavor to realize as much more than $3,650 as is passible, and all over that sum will go to the creditors, less the broker's commission. Should he fail to receive more than $3,650 net, he must nevertheless pay that amount to the receiver and dispose of the property on his own account.

JACKSON PRICES LOWERED; MAKE NO RADICAL CHANGE

Reduces Figures by from $90 to $350 and Adds to Attractiveness of Cars —Double-Drop Frame and Crowned Fenders Adopted.

The products of the Jackson Automobile Co., of Jackson, Mich., which heretofore have hardly been within the popular-priced class, have moved nearer it in the line which is being introduced for the 1914 season, the prices having been reduced by from $90 to $350. Some changes, too, have been made, but none of them are what may be termed radical; all tend toward refinement and improvement of the appearance of the cars.

The line, as heretofore, consists of three models: The Olympic "40," the Majestic "45," and the Sultanic "6-65." On the Olympic the price is $340 less, having been reduced from $1,725 to $1,385; the Majestic is now $90 less—$1,885 instead of $1,975, and the Sultanic has been cut from $2,500 to $2,150, which is a decidedly substantial drop of $350.

In all models the addition of crowned fenders which drop more abruptly back of the front wheels has made possible an addition of 15 inches to the length of the running boards; the tool box, which heretofore has been attached to the under side of the running board, has been placed under the front seat and the whole car has been lowered two inches by means of a double-drop frame, an expedient which not only enhances the already good appearance of the machine, but also lowers the center of gravity.

The Olympic, which is a "four," now has its gasolene tank in the cowl instead of at the rear of the car, and the seat backs are two inches lower, which, with the two inches drop in the frame, makes the tops of the backs four inches nearer the ground than last year. The side lights have been eliminated and in their place is a double-bulb arrangement in the headlights, the two lamps being about 8 and 16 candlepower. The Autolyte lighting and starting system is retained with slight changes in all models. Tire irons on all models have been moved from the right side to the rear of the body.

In the Majestic, a "4-45," no changes have been made except those that apply to the whole line. The Sultanic "6-55" is made, as before, in a five-passenger car with 132-inch wheelbase and a seven-passenger car with 138-inch wheelbase. The added capacity costs $150, but the decrease in price is the same, from $2,650 to $2,300. The Majestic body is steel instead of wood. The Olympic body continues to be of wood construction and that of the Sultanic of aluminum.

Weed Acquires Lyon's Truck Non-Skid.

Supplementing its line of grips by a device for use on trucks exceeding one ton capacity, the Weed Chain Tire Grip Co. has taken over the Lyon Non-Skid Co., of Philadelphia, Pa., and will manufacture those grips on a royalty basis; the royalties will go to G. Albert Lyon, of Philadelphia, who invented the grip and manufactured it on a limited scale. It is designed essentially for heavy-duty vehicles and consists of four sections which join together by means of bolts and form a continuous metal side and cross-piece arrangement. The basic patent was issued June 15, 1909, under the number ———.

Lyon's Philadelphia plant, the equipment of which has been purchased by the Weed company, includes two furnaces, a drop forge, a press and bending machines, and is housed in a one-story structure, 100 x 70 feet. There is now on hand in this factory 50 tons of steel and as soon as this is manufactured the equipment will be removed to the new Weed plant in Bridgeport, Conn., where a duplicate of the Philadelphia equipment is being installed. After the removal, which will be in about 30 days, the capacity will be double that of Lyon's present factory.

Rubber Goods Increases Dividend.

The Rubber Goods Mfg. Co., which to all intents and purposes is the United States Tire Co., has declared a dividend of two per cent. on its common stock as against one per cent. at this time last year. This is the third dividend of the year, 6 per cent. having been declared in March and 1 per cent. in June, a total of 9 per cent. in nine months. For the entire 1912 year the dividends amounted to 9 per cent., and for 1911 8 per cent. It is stated that for the first eight months of this year, or up to September 1st, the Tire company's sales show an increase of approximately 30 per cent.

Crary to Market a Gasolene Saver.

The Crary Co. has been organized in Detroit and has located at 615 Woodward avenue for the purpose of marketing the Auto-Valve Gasolene Saver, which is substantially a dash-controlled air valve inserted in the intake manifold. The officers of the company are: Frederic B. Stevens, president; F. J. Alvin, of the Kingston Carburetter Co., vice-president; L. H. Kirby, secretary and treasurer; C. V. Burnett, formerly of the Michigan Motor Car Co., office and advertising manager.

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The Week's Incorporations



HUPMOBILE REPRESENTATIVES GROUPED IN FRONT OF THE HUPP MOTOR CAR CO.'S FACTORY IN DETROIT DURING THE ANNUAL CONVENTION OF DEALERS

Philadelphia, Pa.—American Motor League, under Delaware laws; authorized capital, $100,000.

Los Angeles, Cal.—Pacific Motor Coach Co., under California laws; authorized capital, $500,000. Corporators—R. G. Munn, T. Y. Drake.

Los Angeles, Cal.—Los Angeles Cyclecar Co., under California laws; authorized capital, $10,000. Corporators—W. S. Bohannon and others.

Wilmington, Ohio—Wilmington Auto Co., under Ohio laws; authorized capital, $10,000; to deal in new and second-hand motor cars.

Los Angeles, Cal.—Safety Auto Signal Co., under California laws; authorized capital, $10,000. Corporators—J. C. Percival, Jr., and others.

Tullahoma, Tenn.—Killman Hydraulic Power & Transmission Co., under Tennessee laws; authorized capital, $100,000; to manufacture motor cars.

Detroit, Mich.—Service Tire & Repair Co., under Michigan laws; authorized capital, $2,000; to repair tires. Corporators—F. C. Farr, E. B. Taylor.

Statesville, N. C.—Carolina Motor Co., under North Carolina laws; authorized capital, $25,000. Corporators—S. B. Miller, G. L. McKnight, H. H. Yount.

Puyallup, Wash.—Herren Auto & Supply Co., under Washington laws; authorized capital, $10,000. Corporators—Hugh Herren, J. A. Menard and others.

Charlotte, N. C.—Harper's Motor Sales Co., under North Carolina laws; authorized capital, $25,000. Corporators—W. J. Crowell, J. A. Rose, C. H. Gorman.

Detroit, Mich.—Auto City Boat Co., under Michigan laws; authorized capital, $10,000; to manufacture automobile accessories. Corporators—H. C. Goodrich, E. O. Eck.

Chicago, Ill.—South Side Tire Co., under Illinois laws; authorized capital, $10,000; to repair automobile tires. Corporators—Lawrence A. Cohen, E. A. Linderholm, John W. Bissell.

San Antonio, Tex.—Auto Owners' Protective Association, under Texas laws; authorized capital, $10,000. Corporators—B. M. Jamison, Harry W. G. Jargo, J. T. Jamison and others.

Chicago, Ill.—Sixty-first Street Garage Co., under Illinois laws; authorized capital, $1,500; to deal in motor cars, etc. Corporators—A. C. Bender, Walter A. Beile, Channing L. Sentz.

Seattle, Wash.—Franklin-Wicks Co., under Washington laws; authorized capital, $10,000; to deal in motor cars, supplies, etc. Corporators—W. A. Wicks, John A. Nichols, Jr., and others.

Chicago, Ill.—Mark W. Heath Co., under Illinois laws; authorized capital, $2,500; to manufacture and sell automobile and mechanical specialties. Corporators—Katherine E. Heath and others.

Philadelphia, Pa.—E. Z. Ryde Shock Absorber Co., under Delaware laws; authorized capital, $10,000; to manufacture motor cars and accessories. Corporators—Frank R. Kessell and others.

Buffalo, N. Y.—Federal Auto-Supply Association, under New York laws; authorized capital, $6,000. Corporators—William H. Fitzpatrick, Augustus G. Striker, George Clinton, Jr., all of Buffalo.

Chicago, Ill.—Simplex Wire Wheel Co., under Illinois laws; authorized capital, $300,000; to deal in wire wheels for motor cars. Corporators—J. J. Cusick, A. G. Loveless, John R. Cochran.

Cincinnati, Ohio—Cincinnati Velie Motor Sales Co., under Ohio laws; authorized capital, $5,000; to deal in motor cars. Corporators—Walter S. Schmidt, Clendenning E. Groesbeck, John L. Fauth, Elmer Stategies, J. J. Grogan.

Hartford, Conn.—Donegan Auto Body & Specialty Co., under Connecticut laws; authorized capital, $21,000; to manufacture automobile bodies and accessories. Corporators—W. R. Donegan, J. J Walsh, Leon S. Risley.

Cleveland, Ohio—Rockefeller Motor Co., under Ohio laws; authorized capital, $10,000; to manufacture, buy, sell and deal in internal combustion engines. Corporators—Sterling Newell, Ellis R. Diehm, R. F. Dennison, Thomas J. Fay.

Camden, N. J.—Reeves Garage & Motor Co., under New Jersey laws; authorized capital, $100,000; to conduct a general motor vehicle business. Corporators—W. Lippincott, Haddon Heights; C. M. Reeves,

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Camden; A. Moulton McNutt, Collingswood.

Caldwell, N. J.—Caldwell Garage & Machine Shop, under New Jersey laws; authorized capital, $25,000; to conduct a general motor vehicle business. Corporators—F. W. Klein and E. A. Rine, Caldwell; J. H. Harrison, Newark.

East Liverpool, Ohio—Chester Rubber Tire & Tool Co., under Ohio laws; authorized capital, $250,000; to manufacture motor cars, tires, etc. Corporators—John E. Newell, James C. Freshwater, George A. Hasson, George Arner.

New York, N. Y.—Auto Trip Co., under New York laws; authorized capital, $15,000; to publish automobile trips, etc. Corporators—Robert Wuerz, 26 Post avenue; Daniel F. Kenney and A. W. Le Bourveau, both of 501 West 182d street.

Columbiana, Ohio—Columbia Tire Association Co., under Ohio laws; authorized capital, $10,000; to deal in rubber goods. Corporators — E. L. Henderson, Thomas Mackierman, H. W. Mackiannan, R. E. Henderson, A. B. Albright.

Elm Grove, W. Va.—Elm Grove Motor Sales Co., under West Virginia laws; authorized capital, $5,000; to operate a garage. Corporators—G. W. Hand, D. L. Walter, John E. Shorts, H. V. Springer, Dr. R. M. Peddicord, all of Elm Grove.

Syracuse, N. Y.—Syracuse Buick Sales Co., under New York laws; authorized capital, $2,500; to deal in motor cars. Corporators—Edward A. Ross, 121 N. Seward avenue, Auburn; Fred Firth and Clara Firth, both of 29 Seymour street, Auburn.

New York, N. Y.—Columbia Tyres Import Co., under New York laws; authorized capital, $50,000; to import and deal in tires, rubber goods, etc. Corporators—Frank H. Twyeffort, 286 St. James place, Brooklyn; B. Ray Paige and A. D. Kahler, both of 1798 Broadway.

Crawfordsville, Ind.—American Motor Wheels Co., under Indiana laws; authorized capital, $600,000; to manufacture motor trucks, etc. Corporators—W. H. Owen, S. C. Rowland, John Vajen Wilson, E. G. Darnell, Gilbert Howell, Frank M. Boyd, Charles M. McCabe.

Glasgow, Ky.—Dickinson Bros. Motor Co., under Kentucky laws; authorized capital, $12,000. Corporators—Brents Dickinson, B. G. Dickinson, T. D. Dickinson.

Richmond, Ky.—Dathrage Airless Tire Co., under Kentucky laws; authorized capital, $14,000. Corporators—J. E. Collins, S. H. Dathrage, George W. Phelps.

Change in Capitalization.

Indianapolis, Ind.—Ray Harroun Co., from $50,000 to $600,000.

PROMINENT MEN IN TRADE WHO ASSUME NEW DUTIES

Resignations and Promotions That Serve to Place Many Workers in New Places—Few Leave the Industry.

Tom Jones, former advertising manager of the R. C. H. Corporation, of Detroit, has been added to the publicity staff of the J. I. Handley Co., of Indianapolis.

W. W. Beeson has been appointed manager of the Studebaker branch in Atlanta. Tributary to the branches are the States of Georgia, Alabama, Florida, South Caro-

Arthur K. Dawson, former manager of the Lozier branch in San Francisco, has been appointed assistant manager for Don Lee in that city. Lee handles Cadillacs on the coast.

C. G. Embleton, manager of the Packard Motor Car's branch in Hartford, Conn., has had the Springfield (Mass.) branch added to his dominion. He will divide his time between the two establishments.

H. H. Crawford has been appointed general manager of the Krit Motor Car Co., of Detroit, which, since the creditors signed the extension agreement, is going on as if there never had been even a flurry.

J. M. Van Harlingen, traffic engineering and analysis manager of the International Motor Co., has tendered his resignation to take effect on October 1. He will enter business on his own account as an expert truck and transportation adviser.

R. W. Hutchinson, Jr., former advertising manager of the International Motor Co., of New York, has become attached to the Packard Motor Car Co., of Detroit. He will be known as "publicity engineer" of the Packard commercial car division.

W. W. Calahan, who has been identified with the Goodyear sales department for six years, has been appointed manager of the Goodyear branch in Milwaukee. He succeeds Herbert P. Ziegler, who has been transferred to the Chicago branch.

A. H. McIntyre, who for five years has been engaged in the automobile accessory business, has been appointed New England sales manager for the J. I. Handley Co., of Indianapolis, and as such will direct the sales of Marion and American underslung cars in the New England States. He will have headquarters in Boston.

S. J. Green, for four years sales manager of the accessory department of the Gibson Automobile Co., of Indianapolis, has been appointed sales manager of the Emil Grossman Co., of New York. P. W. Warner, who recently was appointed office manager of the Grossman company, has been elected its secretary. Previously Warner was in the taxicab business in New York.

F. C. Carter has been appointed district manager for New England for the Herff-Brooks Corporation, of Indianapolis, which recently acquired the sole distribution of Marathon cars. Paul Morford, with headquarters at the office in Indianapolis, will have charge of the Atlantic Coast States, and F. E. Wilson, located at Dallas, will have charge of the Southern terrirtory.

Leo A. Piel, former sales manager of the Mitchell-Lewis Motor Co., of Racine, has returned to the Mitchell Automobile Co., of Chicago, Milwaukee and Racine, with which he was previously connected and which handles Mitchell cars in a considerable portion of the Middle West. As sales manager of the Mitchell-Lewis company, Piel was succeeded by Otto C. Friend, the company's former advertising manager.

Recent Losses by Fire.

Garrett, Ind.—Clarence Rogers; garage destroyed. Loss not stated.

Portsmouth, N. H.—Green Street Garage; destroyed. Loss not stated.

Asbury Park, N. J.—Zacharia's Garage, Main street; damaged. Loss, $10,000.

Pontiac, Mich.—Hess Spring & Axle Works, plant No. 2; damaged. Loss, $5,000.

Philadelphia, Pa.—Robert McAllister, 6813 Greenway avenue; garage destroyed. Loss, $5,000.

Long Island City, N. Y.—Prest-O-Lite Co., charging room damaged by explosion. Loss not stated.

Sacramento, Cal.—W. H. Bradley, 1011 11th street; garage and carriage repository destroyed. Loss, $60,000.

Georgetown, Ky.—Prather Bros., 132 West Main street; garage damaged and one car destroyed. Loss, $1,500.

Amesbury, Mass.—James N. Leitch Co., body builder, Cedar street; factory and stock damaged. Loss, $3,000.

Prest-O-Lite Long Island Plant Damaged.

One man was killed and three injured Thursday, 11th inst., when the heating of apparatus caused an explosion in the charging room in the Prest-O-Lite Co.'s plant in Long Island City, N. Y. The charging room, which is but a small part of the plant, is of steel and corrugated iron, and while it was badly damaged the remainder of the plant was unharmed. The cause of the accident is said to have been due to negligence in permitting the charging apparatus to reach too high a temperature during one of the manufacturing operations.

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In the RETAIL WORLD

H. C. White, of West Bridgewater, Mass., is erecting a new garage.

Ralph Gibson, of Washington, Iowa, has sold his garage to Herbert Smith.

C. W. Henzler, of Bismark, N. D., has taken possession of a new garage.

The Emery Garage has been opened in Mazomanie, Wis. Empire cars are stocked.

J. R. Brandt has opened a garage in Los Angeles; it is located on Vermont avenue.

A. Horrell, of Phoenix, Ariz., is about to erect a new garage and salesrooms; he handles Cadillacs.

Elmer Uhl, of Logansport, Me., has opened a garage at 628 Congress street; he will stock Overlands.

Files & Riley, of De Kalb, Ill., have awarded the contract for a new garage; it will stand on 1st street.

J. A. Petty has taken over the East Street Garage in Mount Vernon, Iowa. H. M. Garetson was the owner.

W. M. Sitton and G. G. Martin, of San Miguel, Cal., have taken over the garage business of C. J. Metzler.

Meister & Marcles, of Hartford, Conn., will erect a new brick garage; it will be located at 258 Main street.

A new garage is to be built for the Fredericksburg (Va.) Motor Co.; the building will stand on Princess Anne street.

C. W. Brotherton, of Remsen, Iowa, has admitted F. J. Homan to partnership. They will handle Paige and Mitchell cars.

Bennett & Foremen, of Westfield, Ill., have opened a garage in Hume, in the same State; it is located on Center street.

J. Harold Johnson, of San Francisco, is to build a two-story garage on East 9th avenue; the estimated cost is $4,800.

The Halsey Automobile Co., of St. Louis, Mo., plans to erect new salesrooms at 2201-9 Locust street; the estimated cost is $48,000.

G. H. Hall, of Los Angeles, has bought the Santa Ana (Cal.) Garage of W. G. Milton; the latter handled Regal and Lozier cars.

James F. Pieper, of Sacramento, Cal., has purchased the garage of Casey & Furton; Pieper will continue to handle Detroit Electrics.

E. B. Murphy has taken over the Walker Garage in Riverside, Cal. Walker will be retained as head of the mechanical department.

John Thorpe, of New Bedford, Mass., has been granted authority to erect a concrete garage; it will stand at 191 Colotte street.

C. A. Reed and T. J. Bonney, of Bath, Me., are erecting a garage on North Lincoln street; it will be styled Reed-Bonney Garage.

R. F. Campbell, of 420 East 247th street, Chicago, plans to erect a garage on Cottage Grove avenue; the estimated cost is $15,000.

Charles Ebbinghausen, of Crookston, Minn., is to erect a new garage 60 x 130 feet; the entire first floor will be utilized as a salesroom.

The Germantown Garage & Storage Co., of Philadelphia, Pa., has secured plans for a new garage; it will be erected on Rittenhouse street.

The Modern Electric Garage, of San Francisco, has been granted permission to build a new garage; the site selected is on Van Ness avenue.

Ray S. Bridge, of the Cadillac Sales Co., of Pittsfield, Mass., has secured permission to erect a garage and salesrooms; the site is at 128 South street.

Murray & Allender, of Fairfield, Iowa, have sold their garage to R. T. and C. C. McClain; it was the first garage to be established in Fairfield.

Pexa & Kallauner have entered the trade in Tampa, Fla. They have taken over the Harris & Giddens garage at Lafayette street and Florida avenue.

Bickhart Bros., of 1901-3 4th avenue south, Minneapolis, Minn., have secured permission to erect a one-story concrete garage; it will cost $5,000.

A. M. Hartford, formerly of St. Louis, Mo., and Dallas, Tex., is about to enter the used car trade in Houston, Tex. He will open salesrooms at 915 Main street.

Harry Lightner, formerly with the Wood-Van de Berg Co. in Los Angeles, has branched out for himself; he has opened a repair-shop at 1362 South Flower street.

J. De Lauppe, of Sacramento, Cal., is erecting new salesrooms on K street; he is a Buick dealer. The Diamond-Goodrich Tire Co. will locate in the same building.

C. F. Briggs, of Newark, N. J., has formed the C. F. Briggs Co. and is located temporarily at 971 South Orange avenue; he has secured the Oakland and Lozier agencies.

Shell Adams has purchased E. G. Wheeler's garage in Lineville, Ia. Adams formerly was engaged in the truck and transfer business in Sewal, in the same State.

S. H. Mathews, of Birmingham, Ala., has sold the Mathews Auto Co. to L. J. Beyer; the name has been changed to Krit Motor Sales Co. to correspond with the line of cars handled.

A. W. Wiley and E. F. White have entered the trade in Los Angeles, Cal., under the style Wiley Rubber Co. They deal in tires and conduct a repairing business at 110 East Pico street.

The owners of the Auto Tire & Vulcanizing Co. and C. E. Graham, of Grand Rapids, Mich., have opened the Auto Shop at 11 Island street; the new company will conduct a repair business.

George Lewis and John Murphy have leased the Conley Garage in Herkimer, N. Y. The building, which stands at the rear of the Waverly House on North Main street, will be enlarged.

The Peterson-Keyes Co. has entered the trade in Indianapolis at 541 North Capitol avenue; P. H. Keyes is president and W. B. Peterson secretary and treasurer. The company handles Regals.

The Motor & Machinery Supply Co., of 1519 Grand avenue, Kansas City, Mo., is having new quarters erected; a six-story, steel and concrete building is being built on Grand avenue near 21st street.

The Haynes Motor Sales Co. has been formed in Baltimore, Md., and has located at 408-10 North Calvert street; it will handle Haynes and King cars. Charles A. Shaffer is a principal in the new concern.

L. F. Lipsey and T. C. Sinclair, both of whom have been connected with the trade in Baltimore, Md., for some time, have formed the Regal Motor Sales Co. They are located at 2312 Madison avenue and

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will handle Regals in Maryland and part of West Virginia.

Underhill & Co. is the style of a new firm which has opened up in New York City at West 134th street and St. Nicholas avenue; besides dealing in supplies and accessories the concern maintains a vulcanizing department.

M. J. and W. M. Mitchell, of Victoria, B. C., have formed the Cartercar B. C. Co and have located at 723 View street; they have the entire province as their territory and will open a branch in Vancouver in the spring.

W. Ashley Gray, formerly with the Lindsay Motor Car Co. and the Dorris Motor Car Co., of St. Louis, Mo., has entered the Velie Motor Co. of Missouri; he has become vice-president and general manager of the latter.

Don P. McClure, of Oskaloosa, Ia., has sold the States Auto Supply Co. to H. F. Sheppard, who also takes over McClure's garage and automobile agency; McClure will continue in business as a territorial distributer of Oakland and Paige cars.

The Velvet Co., Inc., has entered the trade in New York City at West 74th street and Broadway; it has the metropolitan agency for Velvet shock absorbers. The officers are: President, H. O. Proctor; secretary, A. H. Miller; treasurer, W. D. Ramsburgh.

The George T. Gaston & Douglas C. Richardson Co. has been formed in Detroit by men of those names; Gaston is an ex-sheriff of Wayne county. The company has taken over the business and location of the branch formerly maintained in that city by the Abbott Motor Co.

A. J. Jackson, of Syracuse, N. Y., has taken possession of the garage at 571-77 South Clinton street, formerly occupied by the Cronin Coach & Transfer Co. He handles Federal and Republic trucks and will use the building as a sales and service station. His Republic territory consists of Onondaga, Madison, Oswego, Cayuga and Oneida counties.

Henry A. Brandtjen, who has been connected with the trade in St. Paul, Minn., for eight years, has purchased the St. Paul Motor Vehicle Co., of 50 East 4th street, and will change the name to Brandtjen Motor Car Co. The company handles Haynes, Lozier and Fiat cars. Felix Joswich, the former owner of the business, will devote his time to marketing a piston scavenging device he has invented.

Fred W. Linz and L. W. Sanborn, who constitute the United Motor San Francisco Co., of 1128 Van Ness avenue, have given up the Maxwell representation after eight years and may retire from the automobile trade; their plans are uncertain. Their territory embraced the entire Pacific Coast country as far east as Butte, Mont., and also included the Hawaiian Islands. They will, however, continue to handle Maxwells until a successor is secured. A new service station is in process of erection.

More Capital for Harroun's Carburetter.

Because the "business has grown out of their hands," to use their own expression, and for the purpose of erecting and owning their own plant, the Ray Harroun Co., of Indianapolis, has increased its capital stock from $50,000 to $600,000 and is offering a portion of the stock for sale at par, $100. With the added capital, it is proposed to erect a new plant in the suburbs of Indianapolis where, in addition to the Harroun kerosene carburetter, strainers, tanks, and similar things will be produced.

The increase of capital has served to disclose Harroun's associates in his kerosene carburetter enterprise. They are: L. D. Woods, president of the Pension Mutual Life Insurance Co., Pittsburgh; R. H. Allen, president of the Eastern Dispensing Co., Pittsburgh; H. B. Wilcox, president of the W. W. Wilcox Co., Chicago, and D. M. Bell, of the Ward-Bell Co., Chicago.

Weed Ends One of its Oldest Suits.

One of the first patent suits started by the Weed Chain Tire Grip Co. for alleged infringement of the Parsons patent, No. 723,299, was terminated this week after having been on the records of the United States District Court in Nashua, N. H., since 1908. It was against the Victor Tire Traction Co., which originally was the Victor Tire Grip Co. It, however, has been inoperative for three years, and when no one appeared for the defense when the case was called Wednesday, 17th inst., the Weed company's attorney asked that it be dismissed and brought to an end.

Dice Engine Acquires Anderson Business.

The Dice Engine Co., which recently was organized in Anderson, Ind., has taken over the business of the American Motor Co. and will continue the manufacture of engines, transmissions, differentials, etc. The officers of the new company are T. C. Werbe, president and treasurer; S. M. Hickman, vice-president, and E. F. Dice, secretary and manager.

January Dates Chosen for Importers' Show.

January 2nd to 10th have been chosen as the dates for the Importers' show which, as usual, will be held in the ballroom of Hotel Astor, New York. Also as usual, it will be managed by Stefan Kjeldsen, secretary of the Importers' Automobile Salon. The dates are the same on which the show has been held in former years, but for the first time they will run concurrently with those of the Automobile Chamber of Commerce's show in Grand Central Palace.

Mrs. Cohen Discontinues Her Horn Suit.

An action brought nearly a year ago by Mrs. Minnie Cohen, of New York City, to restrain the Salvini Electrical Horn Mfg. Co. from making the horn which now is being marketed under the name "Square Horn," was this week discontinued; Mrs. Cohen, who was one of the prospective investors, wished to hold up proceedings pending a patent search.

Takes Judgment Against Whichway.

Robert H. Lanyon this week took judgment in the Supreme Court for New York county against the Tobin Whichway Signal Co., which recently went into bankruptcy; his claim was for $1,010 and was confessed by John W. Tobin, the president. It was on money loaned July 8, 1913.

Breeland Gets Trojan Truck Output.

Walter H. Breeland, 805 Woodward avenue, Detroit, has acquired control of the output of the Trojan Motor Truck Co., which will produce about 100 trucks during the next twelvemonth. They are made in one-ton and three-ton models, listing at $1,800 and $2,500, respectively.

First Dividend for Streator Creditors.

The trustee in bankruptcy of the Streator Motor Car Co., of Streator, Ill., has declared a first dividend of 15 per cent. It is expected that when the affairs of the bankrupt are wound up the creditors will have received between 35 and 50 per cent. of their claims.

Texas Company Sues Watervleit Man.

The Texas Co. this week filed suit in the Supreme Court for New York county against John W. Cramer, of Watervleit, N. Y., for $144.03. It claims to have supplied him with oil to the value of $274.03 between December 2 and 22, 1912, on which Cramer paid but $130.

Fire Damages One Hess Axle Plant.

Fire which broke out early Sunday morning damaged the No. 2 plant of the Hess Spring & Axle Works, in Pontiac, Mich., to the extent of about $5,000. The loss is fully covered by insurance and the plant will be rebuilt immediately.

Continental Truck to Quit Colorado.

The Continental Motor Truck Co., which has built gas-electric trucks on a small scale in Denver, is seeking another location. Among the cities with which it is negotiating for a site is Waterloo, Iowa.

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MOTOR WORLD

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A. B. SWETLAND, President and General Manager
F. V. CLARK, Business Manager.

EDITORIAL DEPARTMENT
R. G. BETTS, Managing Editor
S. P. McMINN HOWARD GREENE
R. W. SHERMAN

ADVERTISING DEPARTMENT
BROCK MATHEWSON, Manager
New York Office
1600 Broadway
HOWARD L. SPOHN LOUIS R. SMITH O. H. ADAMS

Western Office
1001 Ford Bldg., Detroit, Mich.
W. H. TRIPP, Mgr.

Detroit
1001 Ford Bldg.
MAXTON R. DAVIES

Cleveland
610 Superior Ave. East
C. H. HANDERSON

Chicago
Room 510 Harvester Building
606 South Michigan Avenue
H. A. WILLIAMS

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MEANING OF THE LINCOLN HIGHWAY.

If patriotism fails to move them, self-interest should induce a large majority of those who have to do with automobiles to contribute at least the $5 for which the Lincoln Highway Association has issued an appeal. Now that nearly half of the necessary $10,000,000 has been pledged, and the route marked out, the mighty project may be said to have progressed far beyond the dream stage and it is evident that, to become an actuality, it requires but the financial support of at least a majority of those who will be benefited by its construction. Their support should be forthcoming.

By far the larger part of the sum within immediate reach has been pledged by a comparatively few of those engaged in the automobile industry, but so far and so well have plans now advanced that all those who are engaged in either the manufacture or the sale of automobiles or accessories, and all those who use them, should no longer remain but passively interested.

Every mile of good road means more business for those who make and those who sell automobiles, and more pleasure for those who use them. An unbroken stretch of more than 3,000 miles of such highway cannot fail to prove of corresponding benefit, the magnitude of which should be apparent to all. The benefits of such a great highway must be shared not merely by those who may incline to tour from New York to San Francisco, or vice versa, but the linking of so many great cities and so many small towns will permit the direct influence to be felt in thousands of retail stores and hundreds of thousands of homes.

Each should give according to his means, but certainly none who have to do with motor vehicles of any sort is too poor to contribute at least the $5 which the officials of the Lincoln Association are soliciting. It is a work to which dealers and clubs of right should lend themselves. The name of every club and every dealer should be on the subscription list, and every club and every dealer should constitute themselves a committee of one to swell the fund.

There are more than a million cars in use, and if but half of their owners will but contribute $5 each, more than $2,500,000 will be rendered available. Let every man do his part.

REMEMBER THE MOTOR BUGGY!

It begins to appear that the cyclecar is likely to prove more of a disturbing factor in the automobile industry than originally seemed possible. Although the little vehicles themselves are slow in actually making their appearance, the organization of cyclecar manufacturing companies is near to becoming epidemic, and if but a comparatively small portion of the promised outputs is produced it will be sufficient to justify serious reckoning.

Present indications are such that the display of the "Caution" signal is again advisable, for the daily press is giving space to all manner of gross exaggerations concerning the newcomer. Although the real extent of the demand is unknown and entirely problematical, stories which are going the printed rounds describe it as "already enormous." One story which carries this statement in big, black type would have it believed that one budding cyclecar manufacturer, who has not yet completed even his first machine, has orders for 53,000 of them, which, if even half true, conveys its own suggestion.

Motor World long ago stated its belief that the future of the cyclecar, or any other light, narrow gauge, belt-driven vehicle, is at best so uncertain as to make it an object for conservative investment only, and nothing has transpired to alter this view. The conservatism should extend not only to its manufacture but to the placing of orders by dealers.

Apparently it has escaped the notice or recollection of most of those who are now enamoured of the little vehicle that only about five years ago the so-called motor buggy occupied the peculiar niche into which it is now sought to force the cyclecar. The motor buggy was light, positively driven, economical in operation and popular priced, and, moreover, it was of standard tread; and while it never obtained the publicity which has fallen to the lot of the cyclecar, it, nevertheless, seemed to contain such promise that its production was embraced by several manufacturers of repute, and others who projected themselves into the field. But where is the motor buggy to-day? In considering the cyclecar, therefore, it is well that the fate of the motor buggy be not forgotten.

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A. A. A. FORMALLY ENDORSES SINGLE REGISTRATION BILL

Executive Board, at Buffalo Meeting, Votes to Support Adamson Measure—To "Look Into" Matter of Grade Crossings.

Efforts to have enacted a Federal automobile registration law having proved unavailing, the executive board of the American Automobile Association formally endorsed at the monthly meeting held in Buffalo, N. Y., on Friday and Saturday, 12th and 13th inst., the bill introduced in the House of Representatives by William P. Adamson of Georgia, chairman of the committee on inter-state and foreign commerce. It is entitled "An Act to Regulate the Inter-State Use of Automobiles and all Self-Propelled Vehicles Which Use the Public Highways in Inter-State Commerce," and differs radically from the Federal registration originally advocated by the A. A. A., but is even more effective, as it seeks to put an end to the practice of taxing non-residents. It is short and to the point, as follows:

"No person who shall have qualified by complying with the laws and regulations of the State, territory or district of his residence to use and operate such vehicle or vehicles (self-propelled) shall be required in any other State or territory or district into which he may go for business or pleasure to make any additional registration or take out any additional license in order to use or operate any such machine."

Among other business of a routine nature transacted at the meeting, the first draft of the uniform traffic regulations prepared by Dr. H. M. Howe, chairman of a special committee that has the matter in hand, was presented, though the report is not yet complete. A committee, headed by Preston Belvin, of the Virginia State Automobile Association, was appointed to consider the subject of grade crossings with a view to suggesting means whereby they may be abolished. Upon invitation, Dr. E. Stagg Whitin, executive chairman of the National Committee on Prison Labor, was present and cooperation between the committee and the A. A. A. in the employment of convict labor on the roads is assured.

The dates for the next annual meeting, which is to be held in Richmond, Va., were set for December 1, 2 and 3.

Eleven World's Records Fall at Brooklands.

In an assault on both the 1,000-mile record and the 12-hour record, which still stand because of a delayed start due to heavy fog and a broken spring shackle, which stopped the progress of the car after 700 miles had been covered, A. J. Hancock, at the wheel of a Vauxhall car, shattered no less than 11 world's records on the Brooklands track in England, on Saturday, August 30th, to say nothing of setting up four new "class" records. The car which Hancock drove has four cylinders measuring 95 x 140 mm.—approximately 3¾ x 5½ inches—and is rated at 22.5 horsepower; his time for the 700 miles was 7:58:42.74, which figures out at 87.74 miles an hour. The eleven new records are as follows, the average speed being increased in nearly every instance by as much as 10 miles an hour:

Four hours, 366 miles 1,025 yds.; five hours, 456 miles 840 yds.; six hours, 541 miles 100 yds.; seven hours, 620 miles 320 yds.; eight hours, 720 miles 28 yds.; nine hours, 749 miles 1,348 yds.; 300 miles, 3:15:-24.72; 400 miles, 2:21:14.99; 500 miles, 5:34:-10.34; 600 miles, 6:46:57.27; 700 miles, 7:58:-42.74.

GEORGE W. BENNETT DEAD; SUCCUMBS TO OPERATION

(Continued from page 6.)

automobile indutry. In addition, Willys had several times testified in substantial fashion to the worth he placed on Bennett's services, only last year presenting his trusted lieutenant with a life insurance policy for $100,000 on his (Willys's) life.

Outside of the factories, Bennett also made his influence felt. For many years he was active in the affairs of the National Association of Automobile Manufacturers and was one of the strong forces which brought about the merger of that organization and the Automobile Board of Trade into what is known as the Automobile Chamber of Commerce.

In playing such parts, his directness, determination and strength of character never failed to show themselves. He despised cant and hypocrisy. It was his practice to take the shortest way across rather than the longest way around, and when he had anything to say he said it in a manner that left no room for misunderstanding.

Despite his sturdy frame and appearance of great strength, Bennett had been afflicted with more than one man's share of physical ills. For several years he suffered intermittent attacks of appendicitis, but he adopted the "cascade" treatment and declared himself cured, or, at any rate, felt fortified against danger. For years his throat also troubled him, each recurring attack apparently being more severe. Only last winter his vocal chords became partially paralyzed and for several weeks he was unable to speak. He went to Florida, where he recovered, and returning to Toledo he plunged into work with his old energy, and because of his faith that appendicitis would no longer trouble him, his friends scarcely expected that that malady would carry him off in the height of a career which had firmly established his reputation and which was fast leading him to fortune.



*Indicates Sanction by A. A. A.

Sept. 17-18-19, Norfolk, Neb.—Track racemeet under auspices of A. N. Hughes.

Sept. 18, Asheville, N. C.—Asheville Automobile Club's hill climb.

Sept. 20-21, Fort Wayne, Ind.—Track racemeet under auspices of E. A. Moross.

Sept. 20-21—Detroit, Mich.—Michigan State Agricultural Society's track racemeet.*

Sept. 26-27, Peoria, Ill.—Track racemeet under auspices of J. A. Sloan.

Sept. 27, Kalamazoo, Mich.—Track racemeet under auspices of E. A. Moross.

Sept. 27, San Marcos, Tex.—Hays County Fair Association's track racemeet.

Sept. 27, White Plains, N. Y.—Track racemeet under auspices of Geo. T. Long.

Sept. 27-28, Bakersfield, Cal.—Kern County Fair Association's track racemeet.*

Oct. 3, Trenton, N. J.—Inter-State Fair Association's track racemeet.

Oct. 3-4, Oklahoma City, Okla.—Oklahoma State Fair Association's track racemeet.

Oct. 4, Providence, R. I.—Track racemeet under auspices of W. T. Kinkaid.

Oct. 4, Fresno, Cal.—Fresno County Agricultural Society's track racemeet.*

Oct. 4, St. Louis, Mo.—Automobile Club of St. Louis's reliability tour.

Oct. 10-17. Paris, France—Annual automobile salon.

Oct. 11, Springfield, Ill.—State Board of Agriculture's track racemeet.

Oct. 18-19, St. Louis, Mo.—Track racemeet under auspices of J. A. Sloan.

Nov. 7-15, London, England—Annual British Automobile show.

Jan. 3-10, New York City—Automobile Chamber of Commerce's national automobile show in Grand Central Palace.

Jan. 24-31, Chicago, Ill.—Automobile Chamber of Commerce's national automobile show in the Coliseum and First Regiment Armory.

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ASSOCIATION DIVULGES THE ROUTE OF LINCOLN HIGHWAY

Thirteen States to Be Traversed by Coast-to-Coast Boulevard—Individuals Solicited to Contribute in Five-Dollar Amounts.

The Lincoln Highway, that coast-to-coast boulevard which originated two years ago as a dream of Carl G. Fischer, of Indianapolis—the Prest-O-Lite man—made one of its biggest strides since its inception when the route which it is planned will be followed was made known early this week by the Lincoln Highway Association.

Thirteen States will be traversed by the highway; in order they are New York, New Jersey, Pennsylvania, Ohio, Indiana, Illinois, Iowa, Nebraska, Wyoming, Colorado, Utah, Nevada and California. The cities in the order in which they lie upon the proposed route are:

New York—New York City.

New Jersey—Jersey City, Newark, Trenton, Camden.

Pennsylvania — Philadelphia, Lancaster, York, Gettysburg, Chambersburg, Bedford, Ligonier, Greensburg, Pittsburgh, Beaver Falls.

Ohio—Canton, Mansfield, Marion, Kenton, Lima, Van Wert.

Indiana—Fort Wayne, Ligonier, Elkhart, South Bend, LaPorte, Valparaiso.

Illinois—Chicago Heights, Joliet, Geneva, DeKalb, Rochelle, Ashton, Dixon, Sterling, Morrison, Fulton.

Iowa—Clinton, Dewitt, Cedar Rapids, Tama, Marshalltown, State Center, Ames, Grand Junction, Jefferson, Dennison, Logan, Council Bluffs.

Nebraska—Omaha, Fremont, Columbus, Central City, Grand Island, Kearney, Lexington, Gothenberg, North Platte, Ogallalla, Big Spring, Chappell, Sidney, Kimball.

Colorado—Julesburg, Sterling, Fort Morgan, Denver, Longmont, Loveland, Fort Collins.

Wyoming—Pine Bluff, Cheyenne, Laramie, Rawlins, Wamsutter, Point of Rocks, Rock Springs, Green River, Granger, Fort Bridger, Evanston.

Utah—Echo, Parley's Canyon, Salt Lake City, Garfield, Grantsville, Timpie, Kanaka Ranch, Fish Springs, Kearney's Ranch, Ibapah.

Nevada—Tippet's Ranch, Shelburne Pass, Ely, Eureka, Austin, Fallon, Wadsworth, Reno, Carson City.

California — Truckee, Auburn, Tallac, Placerville, Sacramento, Stockton, Oakland, San Francisco.

The directors of the association have endeavored to select a route of easy grades yet combining the scenic splendors of the country. Some of the points either on, adjacent to or to be connected by branch highways are Gettysburg, Washington, Canton (the resting place of McKinley), the Mammoth Cave of Kentucky, the home of Lincoln in Springfield, Ill., Lincoln's birthplace in Kentucky, the scenic splendors of Colorado, the Grand Canon of the Colorado, and the many and varied wonders of Utah, Nevada and California.

Of course, road building is generally recognized as essentially a State or county matter, and for the promoters of the scheme to go forward without considering public sentiment or existing conditions would be unwise, wherefore the association, in "proclamations" which on Sunday, 14th inst., were posted throughout the country, makes plain that it can hope to succeed only with the cooperation of the whole people along the projected route.

It states that its "proclamation" would be of no effect except it be wise and practicable and meet with the approval of the people for such a memorial, and to that end the association maintains that the route it has selected is the result of technical investigation and long deliberation, and that that portion lying west of Chicago long has been known as the Overland trail. It is held up as the most direct and practical route as to grades, curves and general topography and is that road which is to the greatest extent improved and marked throughout its length.

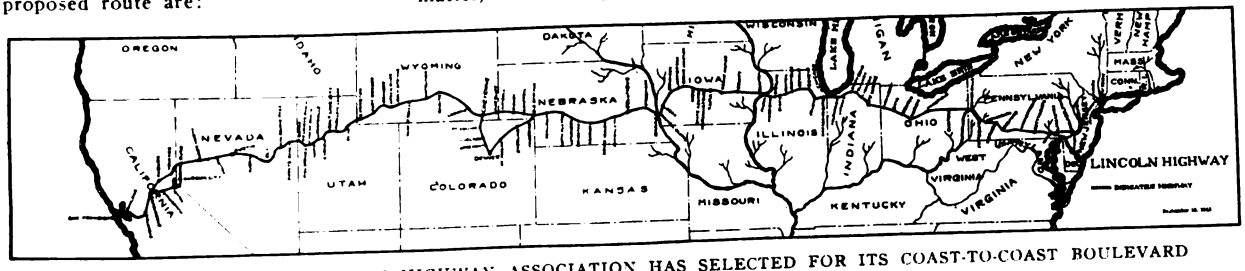
It will be constructed as a memorial to Abraham Lincoln and is to bear his name. The insignia which will be used to mark the way consists of a large letter L on a placard, the top of which is red and the bottom blue. Above the L is "Lincoln" and below "Highway." Wherever possible the road is to be of concrete and not a mere graded dirt track. It is planned to make possible a coast-to-coast trip over a course as pleasurable as a paved city street or boulevard.

So well has the preliminary work progressed that the promoters hope to have parts of the route ready for use by the time of the Panama-Pacific Exposition in San Francisco in 1915. Nearly half of the $10,000,000 required already has been pledged, chiefly by automobile manufacturers, but appeal is now being made for individual five-dollar subscriptions, although there need be no limit but the generosity of the giver.

However, each person who donates $5 to the association will receive an engraved certificate stating that he has financially allied himself with the other backers of the plan. He will also receive an automobile dash plate and a pocket card, each indicating that he is a contributor to the association.

The certificate states the object of the association to be "to immediately promote and procure the establishment of a continuous improved highway from the Atlantic to the Pacific, open to lawful traffic of all descriptions without toll charges, and to be of concrete wherever practicable. This highway is to be known, in memory of Abraham Lincoln, as 'The Lincoln Highway.'"

Those who are directing the work of the association are: President, Henry B. Joy, president of the Packard Motor Car Co., Detroit; vice-president, Carl G. Fisher, president of the Prest-O-Lite Co., Indianapolis; vice-president and secretary, A. R. Pardington, of New York; treasurer, Emory W. Clark, president of the First National Bank of Detroit; directors—Russell A. Alger, president of Alger, Smith & Co., Detroit; F. A. Seiberling, president of the Goodyear Tire & Rubber Co., Akron, O.; A. Y. Gowen, treasurer of the Cleveland Builders' Supply Co., Cleveland, O.; Paul H. Deming, of the George Worthington Co., Cleveland; Albert J. Beveridge, of Indiana; John N. Willys, president of the Willys-Overland Co., Toledo, O.; Roy D. Chapin, president of the Hudson Motor Car Co., Detroit. Henry E. Bodman is legal counsel and Frank H. Trego is the association's engineer.



ROUTE WHICH THE LINCOLN HIGHWAY ASSOCIATION HAS SELECTED FOR ITS COAST-TO-COAST BOULEVARD

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DODDERING AND DODDERERS

Type of Man Who is Always Busy but Never Accomplishes Anything—Those in the Automobile Trade Whom the Definition Fits.

It does not appear whether or not there is such a word as dodderer. Nevertheless, that there are such beings is undeniable. Who are they? What do they do? Why are they entitled to fame? Do they deserve recognition at all? How may one know a dodderer when he sees him—and how may he know himself?

The dodderer is not a rare bird. Unfortunately, he is seen almost everywhere, in every business. He is not a quadruped. He is a biped—a two-legged human creature whose principal occupation is doddering. What is doddering? It's a long story. But it needs telling—and it is sure to be told. Sooner or later all truth must come to the light. And then the dodderer will be exposed. So, in the language of a national advertiser, "Eventually—why not now?"

Never Stays Long on Any One Task.

Hence this subject. The dodderer is a human flail who keeps everlastingly busy but accomplishes little. He spends his time delving into this and into that—but never staying long enough on any one thing to do any good. He is a salesman who has a long list of prospects on whom he calls without any real confident intention of getting an order—who nibbles here and there in the hope of finding an easy one. He does not have any systematic plan and he does not lay out his work thoroughly and carefully; he hears the last "noise like an order" and makes for the ground, getting there just a few minutes or a few days late. He is always busy, but never gets anywhere.

The dodderer is a general manager who is continually dipping into and sampling the soup of business—always demanding some new spice, some new flavor—always complaining that the soup is either too hot or too cold—but always making his complaints in the air and never intelligently analyzing and applying a remedy. He is busy—immersed in the soup—and never able to see clearly and act decisively. He just dodders and is as helpless as an automobile dealer who finds himself submerged in the details of his business, who has no time to see his business in its larger aspects and no time to plan for the big things. He is everlastingly busy, but his business does not keep apace; he does not attract the bright, energetic, hustling salesman; he gets "those that are left," because the dodderer has not the broader vision that perceives the wisdom of paying a high-salaried man who gets the business rather than a low-priced employe who is nothing of an inspiration and very little of a help.

What the Doddering Repairman is.

The dodderer is a repairman who skips from one job to the other without finishing any; whose help is disorganized because they never know what the boss wants or what he will do—whose customers are always grumbling because he does not keep his promises and never delivers on time.

That's what the dodderer is. He is a national institution and will probably continue from one generation to another. But it is to be hoped he will awake and, looking in the glass, see himself as others see him and apply prompt measures for a quiet but quick transformation into a clear-thinking, purposeful, business man who plans his work and works his plan.

CHANGING MENTAL ATTITUDE OF "WAITING" PURCHASERS

There are a number of persons in your locality who are going to buy cars some day. Most of them have the means and would buy now if the right sort of argument were given them. People of this sort are always "waiting" until the salesman with the irresistible "punch" comes along and then they suddenly become buyers. There is no consolation in saying to yourself "That man told me he wasn't going to buy till next year." You can mentally call him a liar, but it will avail you nothing. He told you the truth when you talked to him; it was then his mental attitude; but someone made him change his mind and that some one naturally derives the benefit.

SEATTLE "SERVICE MEETINGS" AND THE FRUITS THEY BEAR.

The Seattle branch of the Ford Motor Co. holds "service meetings" twice a month and finds them very profitable. The original idea was to school employes in the practical features that make for intelligent, satisfactory service. Gradually this plan has broadened to include suggestions and criticisms from employes that would in any way improve the service.

Ford owners in the vicinity heard of the meetings and their interest was so keen that now the programs are frequently made to include numerous topics of general interest covering the instruction, operation and repair of Ford cars, with such other points as may prove helpful to Ford owners and employes. It has been made apparent that these meetings have a distinct value in bringing Ford owners in closer touch with the organization, and one of the most satisfactory results has been the large number of prospects developed and the sales that have followed.

Meet Customers and Avoid "Knockitis."

Don't be afraid to meet your customers. Being afraid of them is a sure way to drive their trade to another dealer. Complaints are unpleasant, but if left unremedied they develop surely and easily into "knockitis." A satisfied customer is your best advertisement.

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MAKING OLD CARS SELL NEW

Increasing Profits by Not Neglecting Buyer of Used Car—Methods Employed by One Dealer that Have Proved Worth While.

The sale of a used car ought to be simply the preliminary work for getting a new car of the line you sell into the hands of that customer. Sooner or later the man who bought the used car is going to detect the little noises and the slight shortcomings of the used car he bought and comparison with the swift, silent machines of the most recent vintage is going to make him long for a car that is brand new all the way through.

Every time the clutch slips, or the shifting fingers in the transmission fail to work smoothly, or the brakes slip and need relining or the axle gets noisy he is selling himself a new car. He does not know it, but just the ordinary little things that are liable to happen to any car, new or old, will gradually develop in his mind the fear that his used car is wearing out, and then is the logical time for the dealer to make a good deal on a new car.

Fear Used Car Buyer Will Ask Service.

Here is where a great many dealers fall down. When they sell a used car they bid it a fond farewell and devoutly hope they may never again see the man who purchased it. They are afraid that his next visit will mean a demand for free repairs or free service or other things they do not want to give. They promptly forget his address. He is not sent any announcements of the new models or any other literature that might remind him of the firm from whom he bought his car.

Not all follow this plan, however. One dealer who has sold a good many used cars at fair prices gets himself on a friendly footing with the customer when the sale is made and frankly tells him that a used car is always more or less of a gamble—that even with his experience in the business he could not always be sure of picking a winner. On the other hand, most of the cars of reliable make are good for a great many years' service and that it is more than likely he will get all the service he requires from the car he has chosen. He hopes the customer will keep in close touch with them, and so forth. The man goes away feeling that here is a square sort of a chap worth keeping in touch with.

Shows Superiority of "Newest" Model.

As time goes on this dealer develops his connection with the used car customer as circumstances permit, and after six or eight months begins a series of adroit attacks calculated to make the U. C. C. keen for a new car. He is sent all literature that is distributed and gets everything sent to a new car prospect except the letters. Every once in a while the dealer drops around to see him and take him or some member of his family out in a "latest model." Should some little trouble develop in the used car he seizes the opportunity to have the U. C. C. try one of the new models and drive it himself. After a few such occasions the U. C. C. invariably begins to talk new car himself. Then is the strategic moment, and for the first time the dealer really launches into a selling talk on the new car. And in most cases he sells the new car. Or, as he says, he makes the U. C. C. sell himself.

This is much better business than developing a customer for someone else. It takes courage, method and tact, but it delivers the goods.

MAKE USE OF ANNOUNCEMENTS THAT COME FROM FACTORIES

From many factories at this time come many handsome announcements giving details of the new cars. More than one dealer will paste these on his window; others will hang them up in the show-room; still others will look at them and do nothing until all the excitement is worn off. The time to use these announcements is while they are **new.** Place the one that comes to you in the window first shot. Don't hesitate and don't wait.

CLEAN WINDOWS AS MEANS OF DRAWING OR REPELLING TRADE

Show windows of the sort that command attention and invite a second look are not so hard to achieve as might seem at first blush. The principal elements in securing the hoped for results are light, cleanliness and location. The drawing power of cleanliness (meaning clean, brightly polished glass and clean interior) is so great that one instinctively pauses at a clean window. So many windows are allowed to remain dust covered and unwashed save for an occasional lick-and-a-promise treatment that a real clean window compels attention.

Not only this, but a clean window singles you out as a live one.

People may not remark on it, but they have that feeling about you, just the same—and when they get ready to buy you will not suffer any from having created that sentiment.

People like to do business with the live ones; they are almost certain of better treatment and as Americans we have been led by experience to expect better values from the dealer who is wide awake. We feel that he is likely to have the most up-to-date and reliable goods. So where there is no warm personal friendship to prejudice us we unfailingly bend our way toward the store that proclaims the interest and pride of the proprietor in his business.

Many places of business discount their architectural beauty by permitting dirt and disorder; on the other hand, others without architectural attractiveness draw like a magnet from sheer cleanliness. Every automobile dealer should make his place conspicuous for its freshness.

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"My Best Sale and Why I Regard It as My Best"

How the Boasted Repair and Service Equipment of a Competitor Was Turned to Advantage by the Man Whose Establishment Was Small—Another "Best Sale" Which Came Only After Hold on Buyer Had Once Been Lost.

By ROBERT C. CROWTHERS, Cincinnati, Ohio.

OVERCOMING A DISPARAGING STATEMENT THAT WAS TRUTHFULLY MADE BY A COMPETITOR

My best sale was made away back in 1909 when I was selling lots of E——s. My customer had gone through the demonstration period, having taken numerous demonstrations in cars in which he was interested and in some that he was not; and by a sensible system of elimination, had thrown out all cars except the P—— and mine.

I had taken him and his wife home and was doing my best to get him to close, but all I could do was to get his promise to let me know his decision at 4 o'clock the next day. I knew that he would come in, for I was well acquainted with him, and at 4 o'clock I met him at my door. After considerable hem-hawing, as most people do when they have something unpleasant to impart, he managed to tell me that he had decided to buy the other car.

"I have just left their place," he said, "and they showed me through their entire establishment. Their building cost $125,000. They have $5,000 worth of tools and employ 35 skilled mechanics in their repair shop. When I asked them about you and your place they laughed and replied, 'Why, he has no repair-shop at all worthy of the name, and has really only one mechanic and two or three dubs in his place.' It was this that made me decide to buy their car. You can't blame me, can you?"

Two salesmen in the competition for stories of "My Best Sale" promoted by Motor World, narrate the part that "knocking" can play in the selling of a car.

In one story, the disparaging statements of a rival had taken a prospective buyer away from a salesman who regarded the sale as nearly made; but the boast of the rival was turned against him and the sale was saved.

In the other the salesman lost a sale by unwise statements but profited by the lesson and recouped his loss at a later date. Both required clever, spur-of-the-moment salesmanship, and in each case the necessity for instilling confidence in the purchaser is vividly illustrated.

I did not reply to him for a moment, but when I did I looked him straight in the eye and said: "They are the meanest competition I ever had, but for once they have told the absolute truth.

"It is true that I have not a large establishment, but it is equally true that my customers are as well satisfied as theirs. I have a standing offer at the automobile club where I eat lunch with many men who own all kinds of cars, that I will buy a suit of clothes for anyone who can find a dissatisfied E—— owner in ——, and up to this time no one has called me into his tailor's. However, let us follow my competitor's statement through to its logical conclusion," I continued. "If it takes 35 men and $5,000 worth of shop tools to take care of 250 P—— cars, while I, with only one mechanic and two or three dubs, with no repair-shop at all worth speaking of, can take care of 125 E——s, which is the better car for you to buy?"

He stood as though transfixed, but finally replied: "By Jove! They never thought of that. How soon can you get me a car?"

"I have anticipated this sale," I responded, "and have telephoned the factory to have a car tested out and ready for the road. If you will leave with me at 9.20 to-night, we can be in the E—— factory at 7.30 in the morning. We can look around for an hour and leave in the car at 8.30 and be at home to-morrow evening for dinner."

"You have sold me a car," he said.

We went to the factory together and he left his check for the full amount of the car and we drove away.

He has been a well pleased and contented customer ever since.

By ROBERT L. WHITCOMB, Detroit, Mich.

LESSONS THAT WERE LEARNED IN AN ATTEMPT TO "SHOW UP" DEFICIENCIES OF RIVAL CAR

It was to a lady who exercised the greater influence in the purchasing of a car by her husband that I made what I consider my best sale. She was on my list of prospects, and live ones, too, when I learned that she was about to purchase a car from a "cost salesman"—that is, one who gives all his commission in order to make the sale. This lured her on. I called on her and tried to point out the objectionable points in the car which I truthfully knew to be present in it. This was in reality "knocking" the car, and it is needless to say that the sale was lost. "Knocking" is misplaced advertising.

Later she frequented my place of business for service and took great pride in talking of her car. Disregarding the loss of the sale, she was treated like my best customer.

As all new owners generally are finally dissatisfied with their first car, she was no exception to the rule, and when she was ready to purchase a later model of the same make, it was the critical time. Her car had given good service and she had no reason to change; still I knew of the weak intermediate, drive shaft bearing, etc., which were holding up under the good care and skilful treatment of a careful driver. One day, after making a voluntary inspection of the car, I discovered that it was fast "going to pot." Pressing the conversation of selling the car, I succeeded in having her decide to sell it at once. How to place this car where she could see it "go down" was the next thing. By careful planning I gained my point, and the car was under her constant surveillance. The new owner was rough and the car went under in the weak places in a series of repairs. It was only then that I gained her confidence and could touch the question of a new car. I then had no time to lose on the faults of the old car; it was solely the merits of the new one that brought her order shortly afterward. There are a half-dozen good lessons in this sale.

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SIDE LINES AND WHEN THEY OPERATE UNFAIRLY

Reilly Explains Wherein Attempts at Earning Extra Income Have Not in the End the Roseate Hue They First Possessed—Unjust to Man Who Pays the Salary and Harmful to Salary.

Reilly tramped up the stairs of the News building and, with a familiarity which indicated that he had been there before, turned through devious passages and finally emerged into the City Room, where the clatter of a telegraph instrument and the



REILLY WATCHED THE FLYING KEYS FOR AS MUCH AS THIRTY SECONDS

rattle of numerous typewriters marked the late afternoon industry of the half dozen busy men.

Over in one corner, through the bluish haze of cut plug, whang and regular tobacco which rose from anything from a corncob to a meerschaum, Reilly finally discerned Charley, who was automobile editor and several other things combined—mostly other things. The little dealer moved over to where Charley was playing his two-fingered tune and stopped beside this member of the Fourth Estate. He stood in waiting and watched the flying keys for as much as thirty seconds before Charley even so much as noticed him.

"Oh! Hello, Reilly! How'd you get in?"

"Strange things happen sometimes when you leave the door open," answered the dealer. "I brought the picture of his royal highness and that new runabout you wanted."

"Oh, fine! Looks just like you," exclaimed Charley, as he pulled from the envelope Reilly handed him an unmounted print of the dealer at the wheel of a new car.

"Ought to come out good, too."

Reilly bade adieu and turned to go.

"Wait a minute and I'll go with you. I'm almost through," and the dealer waited until Charley ripped the last sheet from his typewriter, threw the copy into the basket and picked up his hat.

"I'm going up your way," said Charley, as they reached the foot of the stairs.

"What's the story?" asked Reilly.

"No story, just a little private business."

"Ah, hah!" was the significant remark.

"No, I'm not going to call on a fairy; it's business, real business."

"That's what they all say," retorted Reilly.

"But honest, it is," insisted Charley. "I've hooked onto a little side line to boost my income."

"What now?"

"Magazine subscriptions."

"Making much out of it?"

"Not an awful lot," replied the newspaperman, "but I hope to. I get in a lick at it now and then. Every little helps, you know."

"Doesn't it interfere with your regular work?"

"I don't think so. Why?"

Side Lines Not Ultimately Satisfying.

"Nothing; only side lines generally do," replied Reilly. "I don't think much of them as a general rule, if you don't object to my giving my private opinion."

"Don't you think I ought to do it?"

"I'm not saying what you ought or ought not to do, but if I were in your place I don't think I would put in too much time at it."

"How so?"

"Well, I'll tell you, Charley," continued the dealer, "I never saw it work out very well. Side lines may exist in almost anything or in almost any line of endeavor, but they probably are more common, or more heard of among salesmen, and they have their undesirable features. You're not doing the best by yourself or the man you work for and in the end you are likely to see that you aren't as well satisfied as you thought you would be."

"Don't you carry side lines?" demanded Charley.

"What?"

"All those accessories and stuff."

What is and What is Not a Side Line.

"Those are not side lines; they're necessary adjuncts of the business. I've got to carry them to hold my trade. A side line is something apart from your regular business. If you send stuff to out-of-town papers, that would hardly come within the strict definition of a side line, for it's a part of the news business. That is the system by which the stuff is obtained; but when you dip into this magazine subscription stuff you are getting outside your regular work."

"May be."

"Not only 'may be' but 'is.'" continued

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Reilly. "Salesmen are prone to fool with side lines in an endeavor to increase their incomes, but I don't think it's always a fair proposition. Here is Smith, a salesman for a tire company; he is paid a salary, and perhaps a commission, to push some manufacturer's line of tires, but Smith thinks he sees a chance to make a little extra money and decides that inasmuch as he is around among business men all the time he might be able to sell office supplies or stationery.

Deviation from "Now and Then" Idea.

"He takes on that as a side line, and whenever he calls on a customer or a prospective customer he makes it an opportunity to put in a whack for his side line. It is to be expected that he will make a little extra money out of it, but he isn't making a consistent increase financially. He isn't going to make the progress he ought to in his regular work, and that is what makes his side line possible. He may experience a temporary and sporadic boost in his income, but it is not consistent and permanent. His gain is a loss, only it may take some time for that fact to become apparent in its full reality."

"But what's the real harm? Here I'm running around all over town and meeting a lot of people; what's the harm in making a try for a magazine subscription now and then?"

"Therein, Charles, lies the fallacy of the whole thing—this 'now and then' idea. If a side line were given absolutely nothing but spare time, time that would go to waste if not applied to the side line, it wouldn't be so bad. But a side line, whether it's a side line of goods, a side line of work or a side line of pleasure, is pretty much like a bad habit in the insidious manner in which it works."

"Why?"

Assumes Quite Unexpected Proportions.

"Because. The first thing you know it has assumed proportions you never expected and has become so important as to overshadow dangerously your regular and legitimate work. Also, it is not difficult to see why this is true, especially if you have watched the thing in its workings for several years. A man starts out with a salary; that is something assured and certain—provided he holds his job. He picks up the side line as a means of extra money, and it is not difficult to see that the more attention he gives to the side line the greater will be his income from that direction; therefore, his natural inclination is to give the side line all the attention he can.

"The people for whom he is supposed to be working are paying him his salary and expenses and are getting some return from his efforts, but while they are also contributing to the expenses of pushing the side line—about which they may know nothing—they are getting no return from the time and energy the man expends in that direction. No matter which way you put it, the company that pays the salary and expenses gets the worst of it. I think you'll admit yourself that it doesn't seem to be exactly fair in all its phases."

"It does sound logical," admitted Charley. "But if a man does his work isn't the rest of his time his own?"

"Take your own particular case," continued Reilly. "You go to work and quit when?"

"Start at 2 o'clock and quit about midnight."

"Then the time between those hours belongs to the News, doesn't it?"

"Yes."

"Well, then, how do you figure that you are entitled to run up on the East Side at this time of day after magazine subscriptions?"

"I haven't anything else to do."

Showing the Newspaperman His Error.

"You haven't eh! You get assignments, I suppose, like all newspapermen, but you know yourself that some of the best stories that come in were not secured through assignments and that some of the best stories that ever happened never were printed because no one happened to run across them. Your beat probably includes hotels or some such general assignment as that, and don't you think it only fair that when you have nothing else to do you should be putting in time trying to get something around the hotels?"

"But I cover the hotels all right."

"But couldn't you cover them better if you put in more time on them? Are you covering them to the best of your ability as it is now?"

"Well," hesitatingly admitted Charley, "there may be something in that, at that."

"Quite right, there is, my boy," and Reilly gave him a fatherly slap on the back.

Not in Harmony with Concentration.

"The successes of to-day come through specialization and concentration," continued the dealer. "The men who climb are the men who make themselves good at one thing and keep at it; then when someone good is wanted in that particular field they go upward, because they understand it best and are the best fitted for the boost. I believe that when a man is engaged in any work or is holding down any one job he should do that work to the best of his ability, and no other.

"If he has something else on his mind it is bound to interfere more or less with his legitimate work. He can't think and plan and work out ideas that will show and help develop his efficiency in his regular work and he, therefore, is not as likely to rise in his regular work. He may dribble along all his life and successfully get away with a regular job and a side line, but he never will attain his greatest success and the greatest success of which he is capable until he throws everything else overboard and buckles down to one thing and makes good at it. By making good I don't mean an average 'make good'; I mean making good to the man's limit. Not only is the side line unfair to the man who pays the salary but it is unfair to the man who takes the salary."

"Do you ever get side lines shoved at you?"

Decides to Watch his One "Iron."

"Yes, lots of them," replied Reilly. "Some day, if my business gets big enough so I can hire other people to look after a good share of it and operate it successfully, I may see fit to invest in some other enterprise, but my belief is that it never will get big enough to be entrusted to others if I don't watch my one iron in the fire while the business is small. If I——"

"Rain!" exclaimed Charley, holding out his hand, palm upward.

"Guess I'll take a car the rest of the way," said Reilly, as he looked down the street to see if one were coming.

"And I guess I'll beat it to the office."

"And that your trip this far may not have been without profit I'll buy a cigar," and Reilly led his companion in through a door which was guarded by one of the few remaining wooden Indians of the city.

Ford's Manual Answers 142 Questions.

There is no doubt that a man who owns a car and does not know much about it can ask a great many questions; but it is safe to assert that any owner of a Ford car would find it a hard matter to ask a question pertinent to the care and operation of his machine that is not adequately answered in the "Ford Manual," a book of 115 pages which just has been issued for the benefit of Ford owners who want to know things. The information is given in the form of 142 questions and answers, covering the car from stem to stern and from top to tires. The questions and answers are divided into groups corresponding with the structural groups of the car itself, and the smallest details are brought into the light in the plainest, simplest way imaginable. Understandable English is employed; clear-cut illustrations help out the text; and, finally, an excellent index makes it a simple matter to locate any desired subject almost in an instant.

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STARTER AND LIGHTS FOR LATEST HUPMOBILE "32"

Westinghouse System Standard in One Model and Optional in Others—Safeguards Added, but Few Changes Made.

It seems to be the rule—though there are a few notable exceptions—that manufacturers who commence business by building small cars sooner or later work into the manufacture of larger machines, sometimes letting the "little fellows" slip into oblivion and sometimes continuing their manufacture, but adding bigger cars to the line. The Hupp Motor Car Co., of Detroit, achieved prominence in an amazingly short time through its diminutive runabout; but it was not long before the small machine was more or less overshadowed by a 32-horsepower car built as a four-passenger touring car and roadster and later as a six-passenger car and inside-driven coupe.

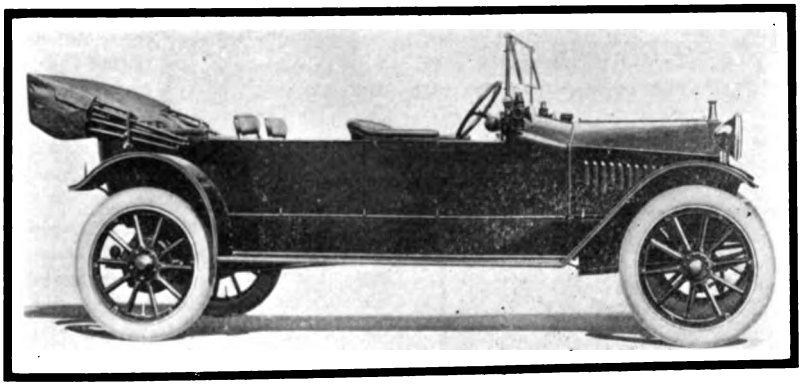
There has been but little change in the larger Hupmobile since it first made its appearance; the principal mechanical features that distinguished it still are abreast of the times in their effectiveness and efficiency, though they were incorporated in the car two years ago. Perhaps the most important addition that has been made to the car is the most recent. In the latest models, which just have been announced, provision has been made for the installation of the Westinghouse electric starting and lighting system, and this is furnished, when desired, at an additional cost on all models except the coupe, in which the electrical equipment is standard and not optional.

Four bodies are mounted on a single chassis—a two-passenger roadster, four- and six-passenger touring cars and a three-passenger inside-driven coupe. Besides the pleasure types, there is a delivery car of the enclosed type. While the price of the six-passenger touring car remains at $1,200, the four-passenger touring car and the roadster, which formerly were listed at $1,000 each, now cost $50 more, or $1,050. The price of the coupe is $1,300 and of the delivery car $1,075. The starting and lighting system adds $150 to the cost of the four-passenger touring car and the roadster, and $100 to the cost of the six-passenger car.

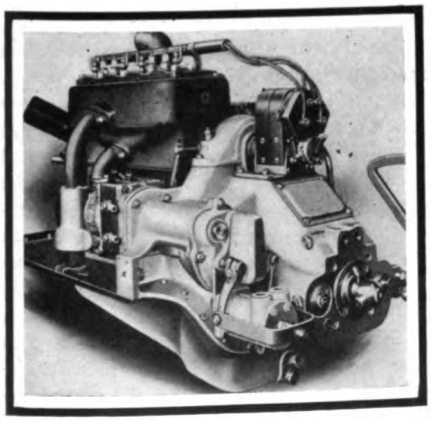
Much has been done to eliminate the little difficulties that sometimes mar the pleasure of automobiling. For instance, a rain shield has been placed on the magneto to protect that vital machine from the incursions of stray drops of water. The gasolene tank has been increased in size, and now holds 12 gallons of fuel—sufficient, it is stated, for about 200 miles of running. The tank is placed high up under the cowl, so that there is a good head of fuel to the carburetter regardless of grades. A reserve supply is made available by turning a two-way cock when the main tank is empty. The spare tire is carried on a rim which, in turn, is mounted in a carrier, so that there are no straps or other fastenings that might chafe the rubber.

The starting and lighting system is of the two-unit type—that is to say, there is a generator to produce the current which charges the 6-volt 100-ampere-hour storage battery, and a separate motor used only for starting the engine and idle at all other times. The generator is driven by "silent" chain at 1.4 times engine speed and at all ordinary car speeds furnishes current to lamps—when they are in use—and also to the battery. The starting motor drives through a pinion which meshes with teeth cut in a steel gear ring by pressure on a pedal, and the switch is connected to the pedal in such a way that the pinion begins revolving very slowly just before the teeth become engaged; the motor attains full power only when the teeth are fully meshed. The motor is on the left side of the engine and the generator on the right, and both, it goes without saying, are fully protected from dirt and water.

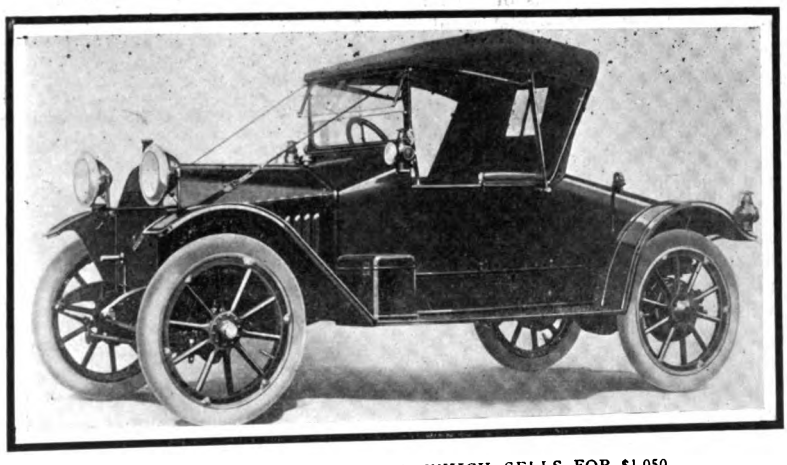
The Hupmobile unit power plant is of the same neat, compact design that has distinguished it in the past; the cylinders are cast in a single block and the valve mechanism is fully enclosed. A distinctive touch is given the unit by the mounting of the magneto on the top of the gearcase, the drive being through a "silent" chain which



SIX-PASSENGER HUPMOBILE TOURING CAR LISTING AT $1,200



HUPMOBILE "32" ENGINE



HUPMOBILE "32" ROADSTER WHICH SELLS FOR $1,050

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runs inside an extension of the crankcase. No little ingenuity has been displayed in the working out of the lubrication system, which, though of the constant circulation type, has no separate moving parts whatever. An oil well which forms the bottom of the crankcase and is sharply sloped backwards so that the oil is deepest at the rear end, extends far enough back to include the flywheel, which dips quite deeply into the oil.

When in motion the oil, of course, is taken up by the rim. Half way up the wheel there is a little oil deflector which skims most of the lubricant off the rim of the wheel and sends it shooting up a wide-mouthed pipe properly located to receive it. This pipe carries the oil to a large main passage in the upper part of the crankcase, whence it goes, through smaller ducts, to the main bearings and thence, through holes drilled in the cranks, to the connecting-rod bearings. Cylinders, camshaft bearings and cams are oiled by splash, though there is an auxiliary direct feed to the cylinders. The surplus oil drops into the well and is strained each time it passes through the system.

The change-speed gears, to which power is transmitted through an 8-plate disk clutch running in oil and fitted with a clutch brake, provides three speeds controlled by a centrally placed lever. The gearshafts are mounted on roller bearings and are short and stiff. Final drive is by propeller shaft, of course, and the rear axle is of the full-floating type, with the differential running on roller bearings. Both brakes operate on drums bolted to the rear wheels and are 12 inches in diameter by 2 inches face.

The standard Hupmobile finish is black with scarlet lake running gear and black-striped wheels; metal trimmings are black and nickel. The equipment consists of rain-vision ventilating windshield, silk mohair top with envelope, Jiffy curtains, cocoa mat in tonneau, rear shock absorber, electric horn and, when electric lighting is not specified, Prest-O-Lite gas tank and gas headlights and oil side and tail lights. Of course, the usual equipment of tools and so forth is provided.

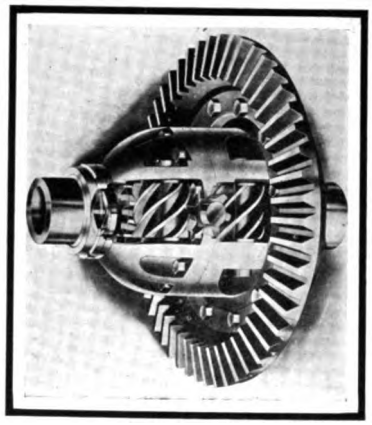
Effect of Sun on Fresh Varnish.

Among the varied directions that have been given for the care of the varnish on a new car, little attention has been paid to the harm that may result if a newly finished body is left standing for any time in the sun. Fresh varnish is extremely sensitive to heat, and if a car is left in the direct rays of the sun the finish is likely to become dull in very short order. The only remedy in such a case is complete revarnishing, for there is nothing that will restore the luster that has been lost.

RADICAL CONSTRUCTION IN SPIRAL GEAR DIFFERENTIAL

Influence of Traction Eliminated in New Device which Acts as True Balance Gear — Construction and Operation.

It is singular, to say the least, that up to the present time, the ordinary differential mechanism, which long has been viewed by engineers and others as imperfect in action and as more or less of a makeshift arrangement, has survived, in its existing form, the general alteration that has further perfected in the change practically every other part of the motor vehicle; it is true that sporadic attempts have been made to overcome its shortcomings—several mechanisms calculated to replace it have appeared but few of them have lived up to the expectations of their sponsors—most prominent among which is made apparent by the adoption of differential locks by a number of prominent commercial vehicle makers.



MUEHL SPIRAL DIFFERENTIAL

Now, however, all the disadvantages of the ordinary type of spur gear differential bid fair to be subdued, for there soon is to be placed on the market a new type of differential which is radically different in construction and in action from the generally familiar type. It is the Muehl differential—named for its inventor, Wm. F. Muehl—and arrangements now are being made for its production both in America and abroad by the M. & S. Gear Co., whose offices are in the Dime Savings Bank Building, Detroit, Mich.

The Muehl differential differs from others of the orthodox type in that the differential gears are of the spiral type—this is made plain by the accompanying phantom view of its internal economy—and it is because of the form of these gears that the mechanism differs in action so completely from the action of the usual type of so-called equalizing gear. The action of the conventional differential is governed by both the traction of the wheels and the distance traveled by them, whereas the action of the Muehl is governed only by the distance.

In other words, the Muehl differential provides what is to all intents and purposes a solid axle as long as the two driving wheels rotate at the same speed; differential action is permitted, however, when one wheel rotates faster than the other, as when a car is rounding a curve, for instance, and owing to the action of the spiral gears the power from the engine is proportionately distributed between them both.

In construction, six of the spiral gears are anchored or journaled in the housing and have no rotative powers of their own. They are driven around with the housing, thus forming a complete mechanical lock and driving the two axle gears with equal speed when both wheels are required to travel the same distance. The two axle gears have rotative power through tractive distance of either wheel when the car is turning, or when one wheel is required to travel a greater distance than the other; the six anchored gears thus are caused to turn on their axes, permitting one wheel to advance in proportion as the other is retarded. As the gears always present the same pulling face when power is applied, through the master or ring gear which is of the usual bevel type, regardless of differentiation, the power is proportionately distributed between the two wheels.

The advantage of equalized tractive effort scarcely requires enlargement, for it means, briefly, that with one rear wheel on slippery pavement, the tractive effort then is applied through the other, which, with the usual differential would remain idle while the other merely spun around. The Muehl differential is neither larger nor heavier than the ordinary differential, for which it can be substituted, where the axles are full-floating, in less than one hour.

Although first examination would tend to give the idea that the cost of manufacturing the Muehl differential must be comparatively high, it is stated by the manufacturers that such is not the case, and in explanation of the statement the following facts are pointed out: The manufacture of the housing is exactly the same as that of the conventional type of differential; six of the spiral gears that are anchored in the housing are of standard size and are all exactly alike; the two axle gears also are alike, making only two settings of gears to cut; on the conventional type each gear must be cut separately; there are 54 teeth to cut on the Muehl and 72 in the conventional type for a 30-horsepower motor.

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GIVING THE MOTOR CAR BUYER "PEACE OF MIND'

Salesroom in Which Salesmen Are Not Permitted to Ask Prospect's Name, Address or Telephone Number—Belief That Sale Is More Likely if Buyer's Life Is Not Made Miserable by Follow-Ups.

"Smith, I'm glad to see someone's waking up."

An automobile dealer who has been a part of the metropolitan "Automobile Row" for a considerable length of time walked into the salesroom of the Chevrolet Motor Co.'s branch at Broadway and West 51st street and addressed this blunt remark to Leslie F. Smith, the branch manager. Smith smiled and, with the visiting dealer, looked to the spot on the wall where hung this sign:

"Our salesmen are not permitted to ask the name, address or telephone number of any visitors to this store. If our product and presentation are not sufficiently impressive to justify the continued interest of the motor car buyer, we have failed of our purpose. Visitors are always welcome."

Those few words sum up a selling attitude that is, to say the least, different—in Broadway automobile selling tactics it makes a very close approach to being decidedly new. It is so different that the first question that comes up is "Does it pay?" The only answer Smith could make to the question was that the business pays; the branch is selling more cars than it can get. If a business is doing that, the owner is not likely to worry much about whether his methods are right or wrong.

The idea is the result of the collaboration of W. C. Durant, the head of the Chevrolet industry, and Smith; who was father of the thought is not material, but after discussion its wording was arrived at, Durant had the sign printed and framed, about 20 x 28 inches, and Smith hung it up.

Although the branch has been open only since the middle of the summer, it stands out as something different from the majority of other Broadway automobile selling establishments; it is on the northwest corner and has a glass window frontage that permits a man on Broadway to see entirely through the salesroom and out into 51st street. The salesroom is not large and there are only two cars in it, but there probably are more visitors there in a day than there are in some other salesrooms in a week. The number which enters daily ranges from 75 to 150. Some buy, some don't.

Smith stated that it would be difficult to cite concrete instances in support of the policy embodied in the sign on the wall, but the working out of the display and sales plan of the branch is interesting to an observer. There is nearly always a little knot of people looking in the windows. They are studying two motors which are set up side by side. One is an old-style motor, cast in pairs; the other is a Chevrolet motor, block cast, with enclosed valves and clean-cut. The latter weighs much less than the former and has many the fewer parts. Between the two is a small sign, "Why buy the old when you can buy the new?"

Exhibit in Window Initial Attraction.

This exhibit proves an interesting study. The newer motor is different from the other in appearance, and those who stop study the two with interest. Its neat and clean appearance is strikingly emphasized. Next they generally look around the salesroom; they see the two cars. If they see the cars they cannot fail to see the sign, for it is the only thing visible on a long stretch of wall and is easily read from the street.

Having seen the sign and absorbed its meaning, many of those who have looked from without step inside and ask questions. After having satisfied their curiosity they leave; some of them come back and buy and some do not, but every one of them goes away knowing more about the Chevrolet line than he did before. It is, at least, one seed sown for the harvest. The seed may not ripen for months or years—it may never ripen; but Smith believes the results will in the end justify the policy.

Partly Due to Desire to be "Different."

"It is partially due to a desire to be different from our competitors," explained Smith, "and also is an honest effort to sell cars in a way that we believe will prove popular with the general public. We do not believe any man likes to be hounded by a salesman, and there certainly is a lot of work along Broadway that comes close to that classification. The sign sums up our policy in the matter and explains it as fully as anything can.

"When a man comes in here we tell him anything he wishes to know about our cars, and if he is willing to listen we explain our proposition to him as fully and as interestingly as we can. In the course of the conversation we drop a remark to the effect that we have some interesting literature which we would be glad to send him, and if he responds at all to that remark and is willing to leave his name and address we take it, but in no case do we come out and bluntly ask a man for that information.

"Our salesmen are instructed to study those who come into the salesroom and to be very careful in their handling of them. If a man is sufficiently interested in our cars to leave his address for the sending of literature we make the way easy for the

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leaving of his name, but we avoid all semblance of pressing him to do something he does not desire to do.

"Personally, I believe there has been too much of that kind of work in the selling of automobiles. This business is not so widely different from some others, and I cannot see why such tactics should be pursued here any more than they should in certain other lines. If you go into Tiffany's and ask to be shown jewelry the salesman will be as courteous as he can and will do his best to interest you in the goods he has to show. If you don't buy, very well. He may hand you his card and say he would like to see you again some day, but he doesn't maneuver for your name and address.

Follow-up not Found in Other Lines.

"If you go into Wanamaker's and look over their goods, even those which are high-priced, you will get every courtesy and an effort will be made to interest you in the merchandise, but a week from that day you are not followed up by a salesman who continues to try to interest you in something in which you, at the time you saw it in the store, did not have sufficient interest to buy it.

"I have speculated as to how the sign is taken by the motor car buyer. This afternoon two men came in and spoke of the sign in a sneering manner. They seemed to look upon it as an evidence of a lack of aggressiveness on our part, but they are the only ones who have so spoken of it. Furthermore, these two men did not appeal to me as being the class of men from which we expect to get our business.

Places Self in Position of Buyer.

"In the whole matter it is merely an effort on our part to place ourselves in the position of the man who is about to buy a car. If I were in the market for a car I would like to investigate the different makes and would like to feel free to go into a salesroom and ask a few questions without having a salesman put on my trail as soon as I left. Oftentimes when a man is out to buy a car and makes a stop at a salesroom, his name, if he doesn't care to give it, is secured through the license number on the car he is driving and, with four or five salesmen from as many different lines of cars after him, his life is made miserable and the salesmen become a veritable nuisance.

"On the other hand, several dealers from along Broadway have come in and have complimented us upon our attitude. One of them said, 'Smith, I'm glad to see someone's waking up.' He said it was time the dealers got away from their old 'prospect hunting' methods. We may discontinue this policy if the future should show it to be wrong, but it appeals to me as being satisfactory to the buyers of cars.

"The policy must be partially right somewhere, for we have on our waiting list some of the best known people in town; they have been in or have sent their chauffeurs to investigate, and as soon as we can get cars for them they will send us their checks. We tell our salesmen at all times to put themselves in the place of the prospect and to handle him as they would like to be handled themselves were they out to buy a car."

Being different—and successful—is the personal policy of Smith. He believes that progress is best made if a man is different from his competitors without being at the same time spectacular. Before going with the Chevrolet people he was Southern manager for the Oakland Motor Car Co., of Pontiac, Mich., and before that was manager of the Oakland branch in New York. His Southern terrirtory embraced ten States.

"Different" Methods in Publicity.

Illustrating his "difference" is an instance of how the Oakland car obtained many dollars' worth of publicity in Atlanta, Ga., at a cost of about $5. Smith had printed a few cards which bore a picture of an Oakland car and a few words, exactly what is not material. Five of these cards were given to prominent men, including the mayor of the city. The five men cheerfully agreed to enter into the plan.

The cards having been distributed, Smith and other salesmen went to the newsboys of the city and said, "We have had some cards printed like this one I am showing you and we have given them to certain men. Who the men are we are not going to tell you, but for every card you bring us we will pay you $1. To get the cards all you have to do is to ask a man if he owns an Oakland car. If he has a card he will take it out of his pocket and give it to you."

Newsboys Spread Car's Name Broadcast.

That afternoon Atlanta's army of newsboys went out into the streets and began asking of every man they met the question, "Say, mister! Do you own an Oakland car?" Only five men, outside the Oakland salesmen, knew what the lads were talking about, but they kept at it and if any man got by a newsboy that afternoon and evening without knowing that there is such a thing as an Oakland car he was a very elusive sort of individual or else deaf. The "kids" stormed the city with their Oakland query. If a man looked blankly at them and wanted to know what they were talking about they only repeated the question until sure the man had not a card in his pocket.

The first newsboy to get a card got it in the outskirts of the city. No more paper peddling for him! He started hot-foot for Peachtree street and burst into the Oakland salesrooms out of breath. No comment was necessary. He handed in the card, got his dollar and was out in a flash to wave the greenback and shout his success—also to hunt for another card. Every card was turned in that evening. The publicity, which, however, could be thus secured in the not too large cities, cost the Oakland people $5 and the few cents that the printing amounted to, but considering the number of business men who had "Oakland car" shouted at them the cost per shout was trivial.

Series and Parallel Lamp Diring.

When electric lights are connected up in series the current is bound to pass through all the lights in the circuit, giving each light an equal share of the current. When the connections are in parallel, however, each lamp takes what current it requires, and if one lamp burns out the others are not interfered with, as they are in series connection, where the burning out of one lamp interrupts the whole circuit. If a lamp of high resistance is inserted in a parallel circuit with lamps of low resistance it will not burn—or, at least, it will not burn as it should—because the lower resistance of the other lamps provides a much easier path for the current, which always goes the way of least resistance.

Remedy for "Force Cracks" in Bodies.

It is to be expected, of course, that the varnish on a car will show wear in time and will appear cracked in spots—"force cracks" they are styled by painters—though if a little care is used, in closing doors for instance, the surface can be preserved for a good deal longer time than usual. In many cases "force cracks" can be cured by gentle rubbing down and revarnishing, though if they have bitten in too deeply the only remedy lies in burning off the old finish and putting on new.

Sheet Aluminum for Vise Clamps.

While copper, brass and sometimes lead are the usual materials of which vise clamps are made for use in gripping things that the steel jaws would be likely to mar, sheet aluminum also is good for the purpose and, in fact, is preferred by some to the more commonly employed metals.

Gum Camphor to Prevent Tarnishing.

Polished metal parts that are wrapped up and stored while the car is out of commission may be kept from tarnishing by putting in the package a small piece of gum camphor.

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REDUCING FUEL EXPENSE BY MANUAL CONTROL

Advantages of Adjustments for Altering Gasolene and Air Supply From Driver's Seat—Action of the Auxiliary Air Supply and Some Simple Types Explained—Home Made Devices From Odds and Ends.

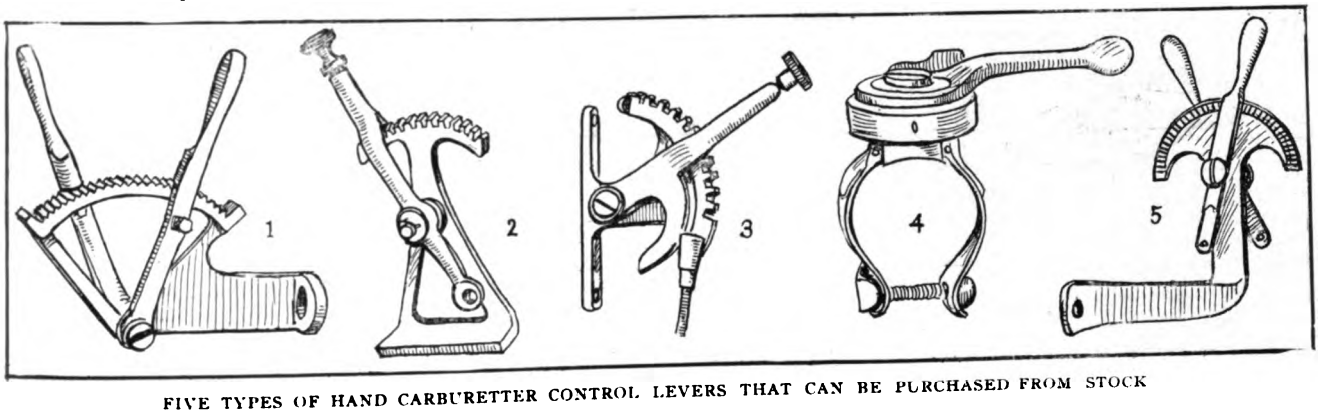
There is no gainsaying the maxim that much can be accomplished by determined effort; to let well enough alone when there is even the slightest change of making better that which already is good is to acknowledge defeat. Incidentally, there is always more than one way to kill a cat, and what cannot be done in one way often can be done in another way. Hence, as it is impossible to drag down the already high price of gasolene, it follows that some other means must be adopted to lighten the burden of fuel expense and it is here that much can be accomplished by determined effort.

Unfortunately for those who drive cars, the average automobile engine will run with nearly every evidence of health and vigor on mixtures that vary from perfect to mixtures that are not by any means perfect; they will run on rich mixtures when they should not be run on them—both because of the willful waste of fuel which must follow and because of the overheating and sooting that is likely to follow—and some of them will run on mixtures that are far too lean. Mixtures that vary on the lean side apparently favor the operator, though they may be cheating him in that they preclude the possibility of the generation of sufficient power to propel the car up grades that once could be "taken on high."

It is true that the average modern carburetter—which is miles ahead of its older prototype—is as automatic in its action as human ingenuity can make it. Manufacturers have striven to no small purpose to perfect devices which will furnish mixture of the proper quality over the whole, or nearly the whole, range of speeds of which the engine is capable. The fact remains, however, that a carburetter is an inanimate mechanism; it has no brain, and therefore it cannot proportion its mixture to the exact requirements of the motor in the manner that man can proportion his food to the needs of his body.

Supplementing Carburetter Action.

It is doubtful whether many really up-to-date carburetters could be improved insofar as their functioning is concerned; they have been designed automatically to vary quality and quantity of mixture according to the needs of the engine, and there is every reason to believe that they do so. But if their action cannot be improved it can at least be supplemented and the supplement is suggested by the construction that has been adopted by several makers who have provided means for manually controlling either the flow of gasolene through the needle valve, or the flow of air, or both.



FIVE TYPES OF HAND CARBURETTER CONTROL LEVERS THAT CAN BE PURCHASED FROM STOCK

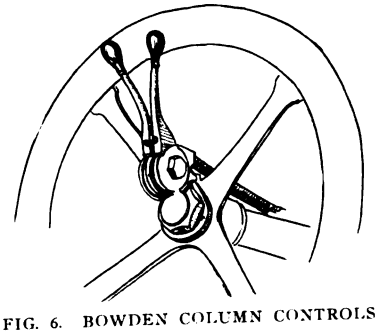


FIG. 6. BOWDEN COLUMN CONTROLS

That some such adjustment which will permit the normal action of even a good carburetter to be supplemented is required, or demanded, is indicated by the fact that manual control of either air or fuel will be a much more prominent feature of next year's cars than it is of this year's cars, or than it has been of any other crop of cars. And in the adoption of such construction there is apparent a well-defined effort to increase engine efficiency, which means, also, to reduce fuel consumption to the minimum consistent with proper operation. And that there is value in providing some means for manually varying the proportions of the mixture is indicated by the fact that at least one manufacturer who always has provided means for opening or closing the needle valve from the dash, has obtained fuel consumption figures far better than those of other makers who make no such provision. It is not necessary, with this particular carburetter, to vary the amount of fuel flowing through the needle valve, for it can be set so that the engine will run almost equally well at any speed. But by varying the amount of gasolene in the mixture, according to power requirements as indicated by road conditions and car speed, the engine can be induced to propel the car at times with considerably less gasolene than normally is required for average conditions.

Obviously, it requires effort and watchfulness to vary the mixture according to the requirements of the car, but in the long run the effort is exceedingly likely to be well worth while. It is not always possible with any degree of success to alter the needle valve adjustment with some carburettes and with some cars, but in a great many cases the air adjustment can be altered

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manually, while the car is running, with considerable success, and little explanation is needed to make plain that where this adjustment is made between the carburetter and the cylinders the suction through the carburetter will be reduced and less mixture will be drawn from it.

Pros and Cons of Extra Air Inlets.

Much has been said for the manually controlled auxiliary air port and much has been said against it, though in any examination of pros and cons it would seem that the greatest drawback to its use is its added complication. Abroad, where greater attention is paid to fuel consumption than is the case in America—the comparatively high price of "petrol" is the reason—the extra air inlet is used to a considerable extent and is looked upon by a good proportion of the motoring fraternity as well-nigh indispensable. In the majority of cases, the purchasers of cars fit these devices themselves, either buying them complete from supply dealers, or using home-made ones, and there is no reason why any one so inclined cannot follow in their footsteps.

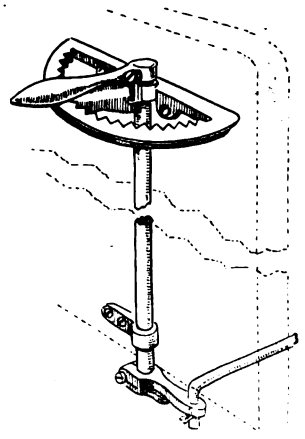


FIG. 8. SIMPLE DASH LEVER

Devices that Are Simple to Make.

It is neither difficult nor expensive to make and fit an extra air inlet which will permit the driver to vary his mixture at will; and as the intelligent use of a device of the kind is certain to reduce fuel consumption the adoption of such a device is a cheap expedient to the reduction of gasolene bills. In nine cases out of ten it will be found that the engine not only will accept a weakened mixture but will run considerably better on it than it will on the normal mixture. And even if the mixture cannot advantageously be varied, the auxiliary air port still has a valuable use in that it may be opened wide on down grades, when the engine is used as a brake, thus not only effectually stopping an expensive fuel waste but cooling the engine as well.

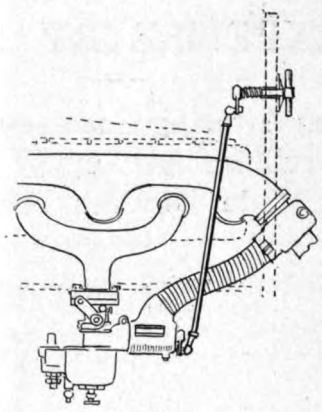


FIG. 7. HOLLEY MANUAL CONTROL

Although there are few manually controlled auxiliary air ports on the market in their complete form, it is quite possible to purchase in the open market very nearly, if not all, of the necessary parts. Miniature levers designed to be fixed either to the dash or to the steering column are carried in stock by Charles E. Miller and the American Auto Supply Co. (from whose catalogs a number of different types of levers illustrated herewith have been reproduced), and a number of others, including the New York & Brooklyn Auto Supply Co., Allied Motor Accessories Co., Auto Owners' Supply Depot, General Automobile Supply Co., and Geo. H. Roberton, all of New York City.

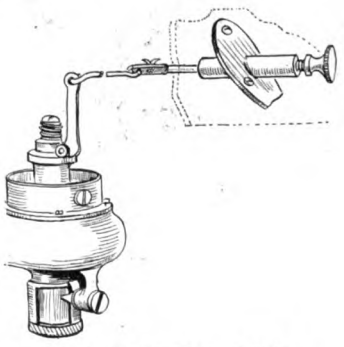


FIG. 9. TOE-BOARD LEVER

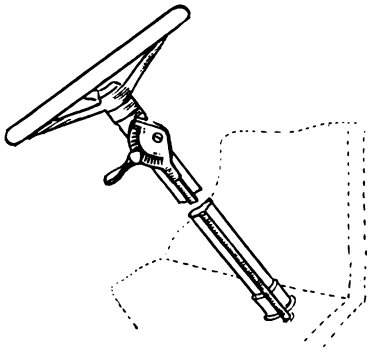


FIG. 11. STEERING COLUMN LEVER

Control Levers Stocked by Most Dealers.

In fact, there are few dealers in Automobile supplies, no matter how small the home city may be, that do not carry or that cannot get at short notice, devices of the kind. Other than a small lever of the kind, the only necessary adjuncts are a couple of lengths of thin brass or iron rod, which, with the necessary couplings, bell cranks, etc., can be purchased in any hardware store. With this material any one with even a small amount of mechanical ability ought to be able to rig up a thoroughly serviceable auxiliary air port or a needle valve adjuster.

In the accompanying plate there are shown several types of hand levers designed for attachment in various ways; all of them, with the exception of Fig. 4, are intended for attachment to the dash. Fig. 4 is a Bowden wire control, and as is shown by the sketch, is intended for attachment to the steering column. Just how simple the attachment of a control of the kind may be is shown by Fig. 8, in which the lever is mounted on the face of the dash with the rod running through a hole to the carburetter adjustment; the rod may connect with either the needle valve or an auxiliary air port, of course.

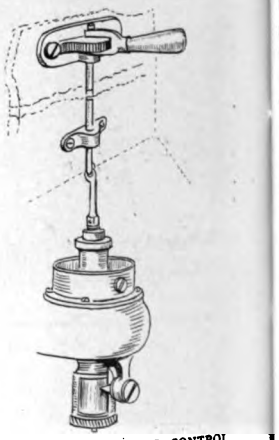


FIG. 10. AUXILIARY AIR CONTROL

Construction that May be Followed.

In Figs. 9, 10 and 11 there are shown three more simple types of auxiliary controls that are distributed by the American Auto Supply Co. of New York City, and in each case the drawing makes plain that no extended knowledge of mechanics is necessary to complete the fitting. In all three of these illustrations, the control lever connects directly with the existing carburetter

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air inlet, though only slight alteration would be necessary to cause them to operate either the needle valve or a separate auxiliary air port.

Among the very few manually controlled extra air ports that can be purchased com-

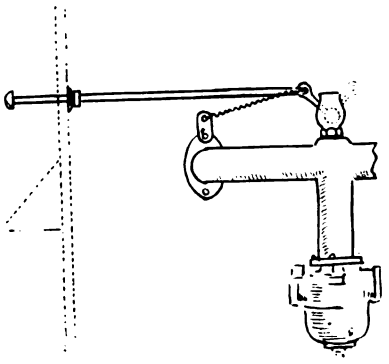


FIG. 12. SIMPLEST AUXILIARY PORT

plete, the Holley outfit, which is produced by the Holley Bros. Co., of Detroit, Mich., probably is the simplest. It is shown as it is attached to an engine by Fig. 7 and scarcely requires explanation. It consists essentially of a flexible tube with a clamp for attachment to the exhaust manifold and a sleeve shutter with which the amount of air admitted to the carburetter can be adjused.

East of Attachment Made Plain.

The Bowden auxiliary air inlet is one of the very few devices designed for attachment between the carburetter and the cylinders that can be purchased on the open market; it is stocked by the J. S. Bretz Co., of New York, sole representatives of the makers, Bowden Wire Ltd., London, and is shown completely by Fig. 13. The Bowden wire mechanism itself, as is fairly well known, consists of a stiff wire encased in a housing of spiral spring and its purpose is to obviate the necessity for bell cranks where there is a change in the direction of the movement it is desired to transmit. The wire may be led around any number of corners, or even tied in a couple of knots, without affecting the operation of the mechanism. Consequently, it is simple of attachment, for no special provisions are necessary. Fig. 6 shows one method of mounting two Bowden controls atop the steering column, where they are within easy reach of the driver's fingers.

The Bowden auxiliary inlet itself is cylindrical, pierced with a number of air holes, as shown in the drawing, and is shaped to fit the inlet pipe. Inside the body there is a plunger which normally closes the air holes. When more air is required this plunger is drawn away from the holes by means of the Bowden wire mechanism. To affix the device it is merely necessary to drill the intake pipe and insert the auxiliary port, drawing the nuts up tight against a washer provided for the purpose. The control, of course, can be placed anywhere that is most convenient, and in this respect it is pertinent to add that it should be placed where it is most convenient, for unless the use of the inlet is encouraged by the visibility of the control and the ease with which it can be manipulated, there is little use in fitting the device.

The simplest possible method of fitting a manually controlled auxiliary air port—it is also the cheapest, for the materials can be purchased for something under one dollar—is shown by Fig. 12. The method is applicable, of course, only where the shape of the intake manifold is as shown by the picture or where it is only slightly different. The only materials required are a large-size priming cup, which can be purchased at any supply store, a short length of spring and a rod long enough to reach from the dash to the intake manifold. The top of the manifold is drilled and the rod inserted and screwed tight. Then if the dash is drilled and the rod inserted through the hole and

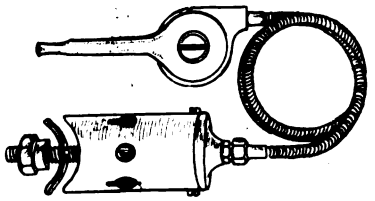


FIG. 13. BOWDEN EXTRA INLET

attached to the lever arm of the priming cup the device is complete. The spring is not necessary, though it will assist in preventing rattles. A home-made device of the kind has the advantages, too, that it affords a ready means for the introduction of kerosene into the cylinders to help remove carbon deposits.

Air Ports from Shop Odds and Ends.

The construction and application of any device of the kind will vary, of course, with the shape and accessibility of the intake manifold, another simple device that can be made out of shop odds and ends being shown by Fig. 14. In this case, the port consists of a short length of brass tubing threaded at one end and closed by a cap at the other end; the cap may be soldered in place. In the side of the pipe, which, needless to add, is screwed into the intake pipe above the carburetter, an oblong slot is cut with a hacksaw or a file. The device is completed by the addition of a sleeve which can be rotated to cover the slot cut in the pipe.

Where the carburetter is attached to a manifold in which several branches unite directly at the carburetter, thus leaving no place for the insertion of the extra inlet, it may be possible to insert a short length of pipe between the carburetter and the intake. If this can be done, it is comparatively simple to saw a hole in the pipe and to cover it with a sleeve connected with a lever on the dash or on the steering column.

In any case, the fitting of a manually controlled extra air port is not difficult, and there is little danger of causing irremedial damage in the attempt. If there is any doubt regarding the advisability of fitting one—whether it actually will cause the engine to run better, or at least to run as well on less fuel—it is easy enough to find this out by drilling the intake manifold and inserting an ordinary priming cup. If no better results can be obtained with the engine under this simple test, and it is deemed inadvisable to carry the test further by the adoption of a larger port, the hole very easily can be plugged, or, better still, the cup can be left in position, where it will serve for the introduction of kerosene.

Necessity for Intelligent Operation.

The addition of an extra air port is quite possible with almost any carburetter and any manifold construction, and the control the port affords probably is superior to that afforded by any attempt to vary the flow of gasolene through the needle valve, for, as already has been made plain, it is not always possible to change this adjustment to advantage. But whether the manual control is connected to the needle valve or to

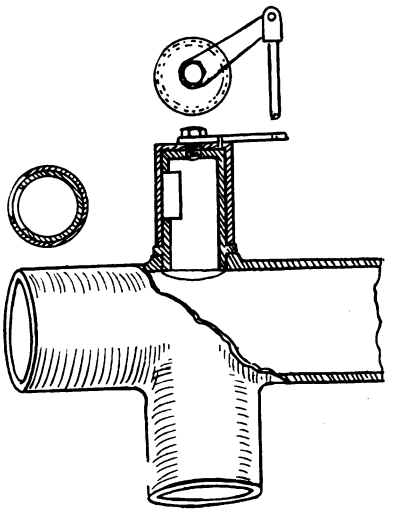


FIG. 14. HOME-MADE AIR PORT

an auxiliary air port, it must be remembered that no good can result, unless intelligent use is made of the adjustment. It other words, it will require patience and practice to ascertain just how much the air port can be opened for the best results when driving under different conditions.

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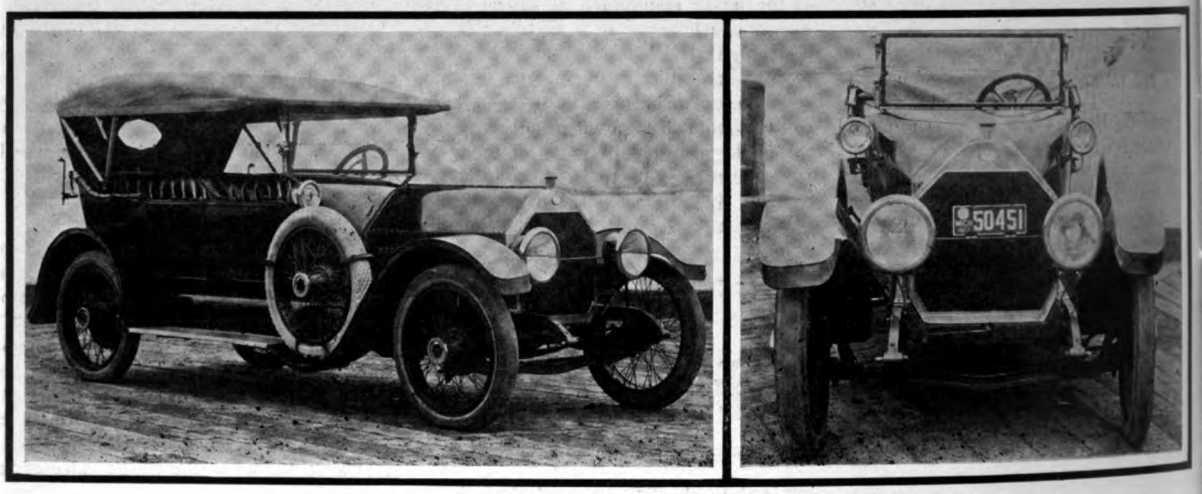
WEIGHT LOW, POWER HIGH IN SIX-CYLINDER S & M

All Components Standard and Equipment Unusually Complete—Spare Wire Wheel Included in the Equipment.

The most conspicuous thing about the S & M car, the manufacture of which, as was stated in Motor World of September 4, has been undertaken by the S & M Motor Co., of Detroit, is that it is the latest exponent of the rapidly growing policy of building high-grade cars of parts produced by specialists in their respective fields. Supplementing the data already printed, the accompanying illustrations and more detailed description go far toward indicating that the machine, which is styled the "S & M six," will be worthy of the confidence reposed in it by its producers.

So far as the quality of the component parts is concerned, it is necessary only to state that the car has a Continental motor with Bosch dual ignition system, Rayfield carburetter, Jesco electric starting and lighting system, Brown-Lipe three-speed gearset selectively controlled, Spicer universal joints, Timken axles front and rear, the latter being of the full floating type, Parish & Bingham heat-treated pressed steel frame, Gemmer model K steering gear, Mayo radiator of the true cellular type and McCue wire wheels shod with 34 x 4½ inch Firestone tires.

To go more into detail, the six-cylinder motor, which has its cylinders cast in threes, has a bore and stroke of 3¼ inches and 5¼ inches, respectively, and its maximum rating is 58 horsepower at 2,000 revolutions per minute—a rating that gives one horsepower for every 57 pounds weight of the car. The change-speed gearing, which is linked to the motor through a multiple disk clutch, is calculated to carry the energy of an 80-horsepower motor; there should be no sign of weakness in this department of the car. Nickel steel is the material employed in the construction of the propeller shaft. The rear axle has pressed steel housing and the front axle is, of course, drop-forged. The frame has a depth of 4 5/16 inches and is of ample stiffness to carry the weight of the car which, incidentally, is moderate for a machine of its size, being 3,200 pounds. The wheelbase is 130 inches and the tread standard.



SIDE AND FRONT VIEWS OF THE WIRE-WHEELED S & M "SIX" TOURING MODEL SELLING FOR $2,485

The steering wheel has a generous diameter of 18 inches, and is placed on the left side of the car, from which it follows naturally that the control levers are centrally positioned. The dashboard has an open-sided cowl under which the instrument board is sheltered and upon which the windshield, which is of extremely substantial design, is built and stands firmly without the aid of stays or extra supports of any kind. The three-quarter elliptic rear springs are underslung, keeping the body low; the front springs are semi-elliptics.



S & M WHEEL AND CONTROLS

The equipment of the car is of the high grade necessary to complement the construction of the machine itself. The upholstering is done in genuine hand-buffed leather. The top is a Golde one-man affair. On the tonneau floor is a felt pad backed with pantasote and reversible. Hexagon robe and foot rails, an electric cigar lighter, a thermos bottle, plenty of convenient little storage pockets and other features indicate the care that has been taken to provide conveniences. With all equipment, including an extra wire wheel and electric horn carried under the engine hood, the price of the car is $2,485.

No Chains on Detroit Electrics

Owing to an unfortunate slip of the pen in the article "Shaft Drive Systems for Electric Cars" in the August 21 issue of Motor World, an illustration of a motor with chain drive to the shaft was given a caption indicating that it was the motor and drive of the Detroit electric, the product of the Anderson Electric Car Co., of Detroit, whereas it applied to another car. As a matter of fact, the Detroit drive is a direct shaft drive, with no chains and but one gear reduction—a fact that was brought out later in the same article by a description of the drive and a properly captioned illustration. The Detroit company was one of the first, if not the first, to adopt shaft drive, and has consistently advocated it as one of the leading features of its car

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HOW CAN THE MANUFACTURER HELP THE DEALER?

Do Away With the Season Model, Suggests Col. K. C. Pardee, One of New York's Veteran Dealers—Shepherd Recommends the Building of Cars the Dealer Need Not Be Afraid to Stand Back Of.

If a fairy godmother should come to any automobile dealer and inform him that he could have one wish in answer to the question "What can the manufacturer do for the dealer?" the replies very likely would be numerous and varied, and it is not unlikely that a few dealers would have to cogitate considerably before selecting the one thing or condition upon which to base the wish.

Whether the manufacturer would grant the wish without the interference of the fairy godmother is an indefinite proposition, but if he should give full consideration to the suggestion of his dealer, it is indisputable that, even if he did not inaugurate the change, he would at least be more familiar with actual conditions in the trade than he would be if he continued to occupy his office chair at the factory; the value of a first-hand knowledge of conditions among dealers is indicated by the increasing number of manufacturers and manufacturers' representatives who make the "swing around the trade circle" and study conditions.

Pardee Favors No-Yearly-Model Plan.

When a Motor World man walked into Col. K. C. Pardee's salesrooms in New York City, at Broadway and West 61st street, and asked him what the manufacturer could do for the dealer, the colonel, who is or comes near to being the dean of New York's Automobile Row, asked if it wouldn't be rather presumptuous for him to set himself up as a critic of automobile manufacturers. When informed that a spirit of suggestion, and not of criticism, was intended, he looked back over his 15 years in the industry and immediately poined out the yearly model fallacy as one of the best things that could be eliminated.

The coloned had not hit upon something unheard of, and he remarked himself that it was rather an old subject, but there probably are few who will dispute the logic of the contention; some manufacturers have seen the light already, or profess to have seen it.

"The whole matter is more or less caused by the growth of the automobile business," said Col. Pardee. "In many respects conditions so far as dealers are concerned have changed and in some respects the attitude of manufacturers has not changed. Some have, some haven't and some won't. It is not unlikely that if I, a mere dealer, touch upon this subject the manufacturers will say, 'Who is he to be telling me how to run my business?'

"But one of the things which I think would benefit the dealer if altered is the yearly model plan of production. As manufacture is generally conducted to-day, a dealer sells a car for, say, $500. Along about this time of year, when the dealer still has cars in stock, the manufacturer brings out his 1914 models. The dealer generally has to cut $50 or so off the price of the 1913 cars to get them off his hands. He has lost money that he would not have been obliged to lose if the new models had not been pushed out into the market.

Series Plan Right if Carried Out.

"As to the series plan, it is all right if actually carried out. There has been considerable discussion of the series arrangement but, nevertheless, if you go up and down Automobile Row you will find that most of the dealers are pushing out their new year's cars. I may be wrong, but it appeals to me as not the best business system. Automobiles were changed and rightfully changed some years ago when they were being developed, and from those early days the yearly model has hung on. But making and selling cars ought to be just as much a continuous and standardized business as making shoes.

"In the shoe business a manufacturer doesn't come out once a year with an announcement of a new line and style of shoes and thereby cause preceding stock to depreciate artificially in value. A shoe that is put in stock in the spring is just as good a shoe in the fall and brings just as good a price. The season model doesn't prevail except with a few radical styles.

Disadvantages of Supplementary Model.

"Also, there is an amplification of the yearly model practice which serves to render the yearly model plan itself less desirable to the dealer and that is the changing of the line after the announcement for the supposed year has been made. Some manufacturers bring out a new line of cars in the summer or the fall and the dealer goes out to sell them only to find that about show time the manufacturer adds what may be called a supplementary model and which causes still another change of program."

"Build Cars Right," Advises Shepherd.

"If you should ask my brother he would very likely say, 'Build cars, C-A-R-S, cars,'" replied J. A. Shepherd, of the Shepherd Motor Car Co., of 318 West 48th street, New York City, when a Motor World man inquired of him what the manufacturer could do for the dealer. He and his brother, Irving R. Shepherd, are business partners and have been connected with the trade for a decade or more. Irving R. is the mechanical man and J. A. the salesman.

"This does not apply to all manufacturers and perhaps cannot be said to be of general application," continued Shepherd, "but there assuredly are instances where the manufacturer could greatly benefit the dealer by pursuing a different method of manufacture. What Dealers Larson and Drouet said in preceding issues of Motor World is true, every word of it, and the feature of the case to which I refer may lie back of Drouet's statement that manufacturers would do well to keep abreast of the times in manufacture.

Production Methods the Basic Fault.

"But the matter to which I refer is not so much keeping up to date in details as it is in making a car that the dealer can sell, a good-looking and dependable car. Many a manufacturer when he starts in to build a lot of cars takes his pencil in hand, sits down and figures that he will build a thousand cars. For this he must order a thousand motors, or, if he is to make the motors himself, must order the material for four thousand pistons—if it is a 'four'—must order a thousand bodies, and so on. The purchasing agent gets figures on what is needed and the manufacturer gets ready and begins to turn out the thousand cars.

"Maybe when the cars reach the dealer the body is such a looking affair that the dealer can't give it away, yet the factory people ordered a thousand of them in the belief that they were just what would sell and would prove popular with the trade. What is the result? The manufacturer keeps

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on turning out the cars and pushing them out to the dealers and the dealers do their best to sell them, but it is mighty hard work. What could the manufacturer do? Well, that is something else. He might have done differently in the first place, and I have known instances where it would have paid him real money to have scrapped the bodies and bought new ones that were of some good.

"There was one manufacturer who designed a car that was a hummer. There was nothing whatever the matter with the design; it was good. But when the cars came to the dealer and he put them out to his customers things went wrong. The dealer investigated and found that the cars were improperly assembled. He took the matter up with the factory but the manufacturer had started in to build a certain number that way and there was nothing to it; he just had to build them that way—and he did so.

Dealer Compelled to Reassemble Cars.

"When the dealer saw that he would ruin his reputation if he continued to market such a car he decided that the only thing he could do was to rebuild the cars. He put them into his service department, and every car that came in was rebuilt and reassembled before it was placed in the hands of an owner. Some parts that were steel were replaced with bronze and a few such changes were made, but in no case was it necessary to alter the design of the car. The design was good, but the assembly and the material used in a few minor parts was bad.

"The dealer stuck it out to the end of his contract and quit. He maintained his reputation as a dealer and saved his business for the future, but it cost him several thousand dollars in service and rebuilding of the cars that should have come from the factory in shape to sell. This does not apply to all manufacturers, as anyone knows, but it is not an unheard-of story. Neither does it apply to the cars we are selling.

Building Down to a Price Not Best.

"Then, there is a tendency on the part of some car builders to build down to a price, despite the fact that it is easier to-day to raise the price than it is to lower it. The manufacturer who cuts down the quality or desirability of a body to shave $50 off the price of the car isn't necessarily making it easier for the dealer to sell the car. So far as dealers generally are concerned, I think they would rather see the manufacturer better the car and boost the price than cheapen the car and cut the price.

"It isn't necessarily the low price that sells a car to-day. It is what the car is. If a man builds a good car he need not be afraid to ask all it is worth, but when the cut price means less value in the car, the car doesn't sell any easier than it did before—nor so easy. Making a lower price for the same value by means of concentration or methods of manufacture is a different proposition.

"It may sound illogical to say it is easier to raise a price than lower it, but just look back over some of the high-priced cars of to-day and see what they used to build. One of them now is away up among the top-notchers and it used to be a $1,400 car. Also, the cars on which prices have been reduced successfully did not have the value cut out of them.

Should Take Advantage of Fall Season.

"One other thing which the manufacturer might do is to get his new cars out on schedule time. The ——— car owes its success to the fact that it always appears on time in the summer and gets full advantage of the late summer and the fall selling seasons. If the manufacturer would bring his old year's production to a close about the first of June and get his new year's cars on the market so the dealer could get the advantage of the following months it would mean a great deal to the retailer and also to the manufacturer.

"When cars don't come along until late in the season the dealer is wasting time on the old models. Other manufacturers, likely, have gotten their cars on the market and the dealer has to work with old stock while his competitors are pushing their new stuff. Maybe the dealer's new stuff isn't going to be any different from his old stuff, but if yearly models are to obtain they should be marketed at a time when they can be sold most easily.

No Credit to Dealer Not Fair Plan.

"Credit to the dealer? Well, that is something that I think will prevail more than it does now. We always had to pay practically cash for the cars we sold, and if we couldn't get cash for them we had to finance the sales ourselves. But I don't see any reason why an automobile dealer shouldn't get credit to a certain extent, the same as a dealer in other merchandise receives.

"Under the cash payment system the manufacturer often had the money as soon as or before he had delivered the car and, believe me, that tided more than one factory over a bit of hard going. If it hadn't been for that practice there wouldn't be as many factories as there are to-day. Credit to the dealer is more prevalent now than it was once and personally I think it is a rather good thing. I may be wrong, but that is my own opinion.

"The most important thing, however, to my mind is building cars that the dealer is not afraid to stand back of; and if some of the cars that are sent out do not seem to be giving satisfaction, do something to lighten the dealer's load in straightening out matters and in seeing that everyone connected with the transaction gets a fair deal."

Kansas City Puts Ban on Joy-Riders.

If the young men of Kansas City, Mo. who are under 21 years of age, want to take a girl out riding in a motor car after dark they will have three choices, according to an ordinance which has been introduced in the City Council—Take "daddy" or "aunty" along as a chaperon, take your sister as the companion in the ride, or pay a fine.

The councilmen are hitting at joy-riding's possibly pernicious effects on the younger element of the city and propose to forbid nocturnal escapades on the part of boys and girls; the ordinance provides that persons of the opposite sex, less than 21 years of age, shall not be allowed to ride in a motor car after dark unless accompanied by an adult or their parents or unless they are brother and sister. A fine of from $100 to $500 is provided for violation of the ordinance.

"It is time the city took some action to protect young girls from young men who use the motor car as a persuasion to go wrong," said Alderman W. F. Fleming, who introduced the measure. "Every night I see motor cars filled with young boys and girls of high school age riding late at night when they should be at home with their parents. Sometimes they are under the influence of liquor. It is no wonder so many cases of the downfall of girls are brought before our eyes. Think of the number we know nothing about."

Trouble from Control Connections.

Abnormal motor action after an overhauling frequently is caused by failure to connect up the throttle and ignition levers and connections exactly as they were before the work was done. A slight lengthening or shortening of a rod, the reversing of a bell crank with arms of unequal length and other simple mistakes may easily cause the motor to handle queerly and lead to the impression that something more serious has happened.

Replacing the Spark Plug Nut.

To render easier the replacement of the tiny nuts that hold ignition cables to spark plugs, it is a good plan to remove the top three or four threads with a file; if this is done, the nuts can be put on, even with gloves, merely by dropping them in place and giving them a twirl.

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"MADE-IN-DETROIT" WEEK REVEALS MANY NEW MODELS

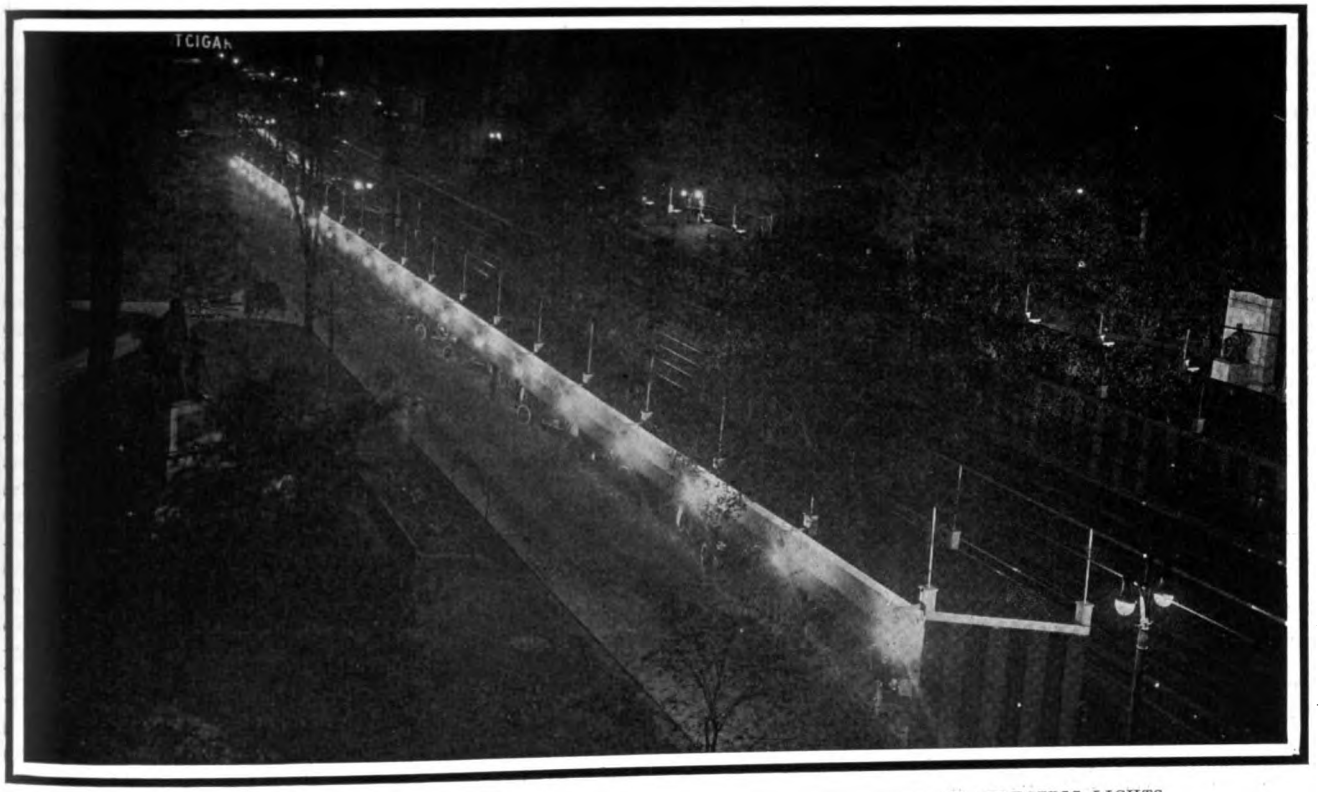
Fifty Exhibits Housed in Booths Erected on the Street Draw Crowds Night and Day—The Exhibitors.

Detroit got its first formal view of the new models that are being produced in its myriad of automobile factories last week during the "Made-in-Detroit" exposition that served to bring to more prominent notice the varied products that come from the automobile hub. And just because it is the automobile hub it is quite natural that a by no means small part of the widespread exhibition centered about automobiles and automobile parts. Altogether, 16 brands of cars were on view continuously from Monday, 8th inst., until the following Saturday, when the exhibition was brought to a close, and the automobile exhibits were supplemented by the displays of 34 accessory makers.

The automobile exhibits were housed in special booths erected for the purpose on Woodward avenue, at Grand Circus Park, and that the exhibition was a popular one is made plain by the fact that night and day the display street was thronged with spectators. During the evening hours, the booths were brilliantly lighted by electricity and were scarcely less attractive than during the day. The complete list of car and accessory makers who displayed their products is as follows:

Automobiles—Century Electric Car Co.; Abbott Motor Co.; Briggs-Detroiter Co.; Cadillac Motor Car Co.; Chalmers Motor Co.; Detroit Tractor Co.; Federal Motor Truck Co.; Ford Motor Co.; Hudson Motor Car Co.; Lozier Motor Co.; Packard Motor Car Co.; Paige-Detroit Motor Car Co., Standard Truck Co.; Regal Motor Car Co.; Studebaker Corp.; and Universal Motor Truck Co.

Accessories—Auto Crankshaft Co.; Crary Co. (Crary gas saver); Metal Products Co. (axles); Bundy-Goebel Mfg. Co. (gasolene gauges); Michigan Top Co.; Williams Auto Top Co.; Gemmer Mfg. Co.; J. B. Carburetter Co.; Trio Mfg. Co. (cone clutches); American Pattern Works; Advance Machine Co. (parts); Standard Tool & Mfg. Co. (stampings); Detroit Forging Co.; Disco Co.; Detroit Gear & Machine Co. (parts); Bower Roller Bearing Co.; Muzzy-Lyon Co.; The Gasolock Co.; Long Mfg. Co. (radiators); Sewell Cushion Wheel Co.; Detroit Wood Pulley Co. (top bows and wood split pulleys); Emil Grossman Co.; Stocker Mfg. Co. (pumps and hood locks); U. S. Tire Co.; Hayes Mfg. Co. (sheet metal parts); Miller Tire Remover Co.; Edmunds & Jones; Jos. N. Smith Co. (body hardware and windshields); Lewis Spring & Axle Co.; Jeffery-Dewitt Co.; Gray-Hawley Co. (muffler cut-out valves, pedal locks and exhaust horns); Timken-Detroit Axle Co.; Rudd Auto Top Co. (tops, trimmings and Jiffy side curtains).



DETROIT'S OUTDOOR AUTOMOBILE SHOW AS IT APPEARED AT NIGHT UNDER THE ELECTRIC LIGHTS

Now a Subway Garage for Detroit.

Following the suggestion made in Chicago to meet the parking congestion in the downtown streets, Park Commissioner Dust, of Detroit, suggests that a subway garage be constructed under Cadillac square for the accommodation of owners who desire to leave their cars downtown during business hours; the structure he considers and has proposed would house 2,000 cars.

New Plant for Master Carburetter.

The Master Carburetter Co., of Los Angeles, of which W. M. Jenkins is general manager, has taken possession of a new plant in that city on Los Angeles street. The Master carburetter itself is the invention of Harry A. Miller, who designed the Miller carburetter. It is intended chiefly to operate on the heavier oils.

Edison Adding to Battery Plant.

To care for a material increase in business, the Edison Storage Battery Co., of Orange, N. J., is practically tripling the capacity of its existing plants.

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RECENT DEVELOPMENTS in ACCESSORIES

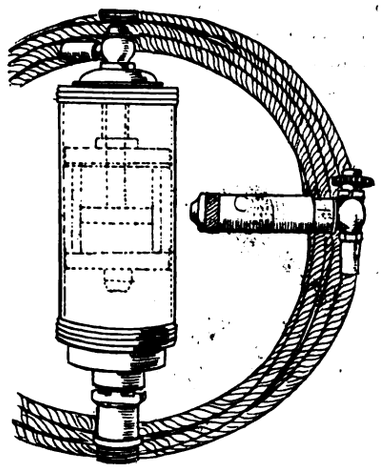
Spark Plug Pump With Double Piston.

Adding one more to the comparatively short list of spark plug type tire inflators now on the market, the Hill Pump Valve Co., of Chicago, Ill., just has brought out a device of this kind which is quite different from anything else of the kind and which has a number of interesting and distinctive features. In the first place, the pump is made wholly of brass and bronze; there is not a bit of iron or steel in it, and it is beautifully finished all over in lacquer. It is furnished complete in a strong, lock-corner varnished box that is small enough to fit into the usual tool box.

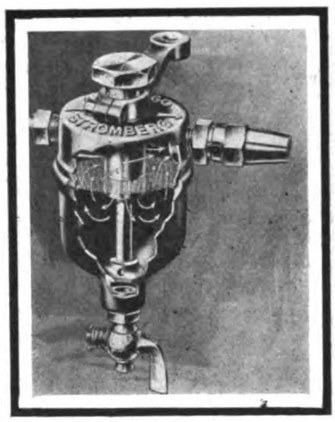
It is in the internal construction of the pump that it differs from others. The outer shell is heavy, seamless brass and contains a substantial bronze piston which is in reality a piston and a cylinder combined. This piston slides up and down under the alternate push and pull caused by the movement of the engine piston in its cylinder. The inside of the piston is a carefully finished cylinder housing a piston all its own which is attached to the outer casing at the top and therefore remains stationary. Hence, when the movable piston is forced upward by the compression in the engine cylinder, air is compressed in the inside cylinder and forced along the flexible tube to the tire. The tube, by the way, is quite as much out of the ordinary as is the pump itself. Instead of being mere rubber hose, reinforced, it is strongly covered with woven material which not only reinforces it but beautifies it as well. So that there may be no danger of inflating tires beyond the recommended pressure of the maker, an ingenious blow-off valve, styled a "pneumeter," is furnished with the pump. By merely turning the outer shell of the "pneumeter" it is possible to set it for any desired pressure and the instant that pressure is reached no more air will be pumped into the tire. The pump can be screwed into place with the hands and two spark plug adapters—one metric and one standard thread—are supplied with it.

Stromberg Offers Gasolene Strainer.

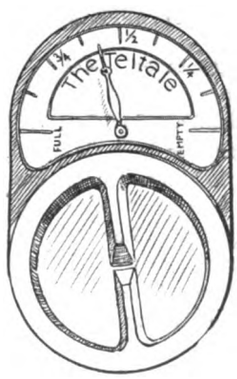
No matter how carefully gasolene is strained when poured into the tank, it is possible for trouble to occur through the clogging of the carburetter by dirt in the tank, or by water condensed from the air in the tank or present in small quantities in the fuel itself. Realizing this, the Stromberg Motor Devices Co., of Chicago, which obviously is in a position to know what is good for a carburetter, has devised an effective gasolene strainer the internal economy of which is well shown in the accompanying illustration. The strainer may be inserted at any convenient point in the gasolene line and is supported by an arm on top which is bolted to anything that offers an opportunity. The fuel flows in through the connection at the left, which may or may not be provided with a shut-off cock, passes down through the central tube to the bottom of the bowl and rises through the strainer—nearly three square inches of the finest wire gauze—to the outlet on the right. As the quantity of gasolene in the bowl is large in comparison to the rate of flow, there is very little movement in the bowl, and sediment and water are precipitated to the bottom, and are drained off from time to time through the cock. The Stromberg separator is supplied with or without the arm and shut-off cock.



UTILITY "BOUGIE" TYPE PUMP



STROMBERG GASOLENE STRAINER



TELL-TALE GASOLENE GAUGE

Gasolene Gauge That's Filler, Too.

By a clever adaptation of the float-and-spiral principle and by the use of an offset body into which a filler cap is screwed, the Bundy-Goebel Mfg. Co., of Detroit, Mich., has evolved a gasolene gauge that has several advantageous features all of its own. Perhaps the most appealing point is that though the gauge is screwed into the regular filler hole of the tank, so that the cutting of a special opening is unnecessary, the gauge does not have to be removed for filling the tank because the offset construction, which is shown plainly in the accompanying illustration, permits the pouring in of fuel through an opening in the gauge body itself. Once applied, the instrument is a permanent fitting, and no tools are needed for making the application. A neat constructional feature consists in making the spiral and the needle in a single piece of metal, so that there never can be any doubt as to whether the operating and the indicating members are fast to each other. Models are practically ready for Ford, Buick and Studebaker cars, and gauges for other machines will follow.

Printing Plant for Klaxon Makers.

The better to care for its needs in the literary field, the Lovell-McConnell Mfg. Co., of Newark, N. J., has completed the installation of its own printing plant, which, quite appropriately has been christened "The Klaxon Press." The equipment of the plant is thoroughly up-to-date, and a new type face styled Klaxon, which has been designed especially, will be used exclusively.

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THREE "GAS" FIRE ENGINES MAKE LONG UNBROKEN RUNS

Eight Others Stopped for Minor Causes During 12-Hour Pumping Test—Results and Conditions of the Demonstration.

Official compilation of the results of the demonstration of gasolene fire apparatus, which finished up the 41st annual convention of the International Association of Fire Engineers that was held in New York City during the week of September 1-6, reveal that the test through which the 11 engines were put was very far removed from being an easy one and that not all of the 11 engines survived the 12-hour full capacity run. The test was held during the last day of the convention, the engines being lined up for the purpose on a pier at the foot of West 54th street and the Hudson River, and all day long they pumped the murky waters of the river through lengths of hose.

The full capacity tests were commenced at 6 o'clock in the morning and, the approximate capacities of the vehicles entered having been ascertained earlier in the week, each was required to operate at full capacity for six hours at not less than 120 pounds pressure, pumping through three lines of hose siamesed into one nozzle; at not less than half capacity and 200 pounds pressure for three hours, pumping through one line of hose and nozzle; and at not less than 250 pounds net pressure for three hours through one line of hose and nozzle. During the tests, stops were permitted only when necessary for changing hose and nozzles and, where possible, engines were expected to be kept running.

Only one suction line was allowed each engine and the average lift from the river to the pier was 10 feet. Engines rated at less than 700 gallons a minute were restricted to a suction line of 4½ inches inside diameter; 750 to 800 gallons, 5-inch suction; and 900 gallons and over, 6-inch suction. Not more than two men were allowed to operate each engine and the amounts of gasolene and lubricating oil were carefully measured and checked.

As may be seen by reference to the accompanying table, only three of the engines —Seagreave, Ahrens-Fox and Waterous— completed the 12 hours test without stops, though to none of them belongs the credit for pumping the greatest amount of water. Although it lost an hour and eight minutes partly because of a cracked pump air dome and partly because of a broken valve spring, the giant American La France engine, rated at 1,400 gallons a minute, pumped some 200,000 gallons more than its nearest competitor, the Seagreave, which ran the whole 12 hours and pumped 542,940 gallons.

Of the four engines that were withdrawn, the Luitweiler and one of the Notts were taken out in the ninth hour, the former because of hot bearings and the latter because of a defective cylinder gasket which permitted water to get into one of the cylinders. In many cases trouble with fire pumps, leaky suction lines and broken fire pump connections caused loss of time that otherwise might have been avoided; the big American La France lost 15 minutes with a broken pump plunger sleeve; the Nott engine lost considerable time with heated pump bearings; the larger of the two Robinsons had trouble with its plunger packing, which leaked a little; and the smaller of the La France engines lost time because of a broken fire pump bearing.

There was not a great deal of engine trouble and not much time was lost for this cause. During the first hour the Luitweiler evidenced ignition trouble which was cured by switching to the battery; the smaller Nott developed a loosened valve rocker arm pin which, however, did not effect its operation much; the larger Nott experienced the same trouble. In the next hour the Luitweiler commenced to steam because of faulty carburetter adjustment, which was corrected; the smaller of the two Robinsons was shut down 43 minutes because of a tight bearing; the larger Nott broke an inlet valve spring and lost 30 minutes; and the other Robinson had its fan belt removed because the draft blew water against the plugs and affected the ignition.

From the fifth to the seventh hours all of the engines ran smoothly until the larger Robinson was shut down temporarily with two broken valve springs; in the next hour another broke and was replaced; the large Nott also had valve spring trouble about this time, the springs on two cylinders giving out at the same time. In the tenth hour, the giant American La France lost 23 minutes because of a broken valve spring. During the 11th and 12th hours nothing occurred to stop any of the engines.

TABULATED RESULTS OF THE FULL CAPACITY PUMPING TESTS.

Name.	Capacity, Gallons per Min.	No. Cyl.	Bore.	Stroke.	Gallons Gasolene Used.	In Operation. Hrs.	Min.	Total Discharge Gallons.
Seagrave	1,000	6	7¾	9	219	12	..	542,940
Ahrens-Fox	700	6	5¾	6½	117	12	..	386,520
Amer.-La France*	700	6	5½	6	108	10	15	343,695
Luitweiler†	600	4	6	6½	56¾	7	34	210,208
Amer.-La France	1,400	6	7⅛	8	255	10	52	673,416
Knox	600	6	5	6	102	10	43	282,918
Nott†	600	4	6½	8	106	8	55	279,135
Robinson	750	6	6¼	6¾	144	11	27	388,635
Nott	800	6	6½	8	159	11	31	392,716
Robinson	900	6	6¼	6¾	100	9	..	392,320
Waterous*	700	6	6½	7	148	12	..	370,560
						Total.		4,263,063

* Withdrawn eleventh hour. † Withdrawn ninth hour.

Automobile Electricity Elucidated.

"An electrical book written for the man who is not an electrician." Thus the opening statement of a little bok that just has been published by the Packard Electric Co., of Warren, O., describes the purpose of that concise collection of electrtical information accurately and satisfactorily. The information covers the ground indicated by the title, "Electrical Installations on Automobiles and Motor Boats," thoroughly and simply; ignition, starting and lighting systems are explained clear through from principle to practice, and excellent illustrations help to make things plain. The book is written by G. L. Chandler for the Packard company, which, by the way, is not interested in the manufacture of electrical apparatus except insofar as the use of conducting cables, which the company makes, is concerned.

German Professor to Discuss Bearings.

Prof. A. Riebe, director of the Riebe Kugellager & Werkzeug Fabrik, of Berlin, Germany, is due to arrive in New York today and is booked to lecture before the Metropolitan Section of the Society of Automobile Engineers on September 25th. Prof. Riebe, who, in conjunction with Prof. Striebeck, claims to be responsible for "the ball bearing in its present form," will speak to the subject, "A Review of the Inception of the Ball Bearing and Roller Bearing and Their Application in the Automobile Industry."

Importers' Salon Reelects Officers.

The Importers' Automobile Salon has chosen officers for the ensuing year, as follows: E. Lascaris, president; Thomas Adams, vice-president; F. Sewell, treasurer; Stefan Kjeldsen, secretary. At the annual meeting at which these officers were reelected a gold watch, suitably engraved, was presented to Secretary Kjeldsen, who has managed the salon since it was instituted.

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"VILLAGE BOOSTERS" HAVE PLAYDAY ON WAGNER'S FARM

New York Tradesmen Prove They Can Be Boys Again—"Young" Wetmore Spurts to Victory on Bicycle, but Spurns Prize.

When Fred J. Wagner is not starting automobile races or selling Ajax tires, he is "raising things" on a farm at Smithtown, L. I. One of the "things" he raises each year is the semi-annual outing of the Big Village Boosters, that organization of New York automobile tradesmen which exists chiefly for having good times on Wagner's farm.

They had the best time of their existence on Tuesday last, when one of the "semi-annuals" occurred. More than 200 "Boosters" and their guests were in attendance, most of them having covered the 40 miles of road in something more than 40 minutes. One of the guests was Mitchell May, secretary of New York State, who proved himself a "good sport" by throwing dignity to the dogs so far as to participate in the wheelbarrow race.

In addition to food and drink and sport, there was music—two kinds of it, one provided by a hurdy gurdy; the other by a full band of Scotch Highlanders.

Both breakfast and dinner were served on the farm, but there was lots of eating between times, the crowning "function," however, being a clambake spread on the lawn in the evening. It was disposed of beneath the electric light, and between swallows the prizes for the day's sports were presented, and a clock presented to Alfred Reeves, one of the big, big "Boosters," who happened to be born on Tuesday, September 16, 1849.

John C. Wetmore, who, although born in 1839, is still as young as the next fellow, spurned the prize which he won in the bicycle race open to those who had engaged in cycle racing before the war—the Spanish war. This was easily the event of the day. It was run in three heats, won, respectively, by Charles S. Wells, C. G. Sinsabaugh and Fred J. Titus, who beat out such "whirlwinds" as Frank M. Dampman, A. G. Bachelder, Wallie Owen, Al Reeves and W. B. Young, all of them names to conjure with in the heyday of cycling.



WETMORE WINS! THE REST NOWHERE!

Wetmore drew a bye, which made it unnecessary for him to compete in a heat. He was, therefore, much fresher than the winded "crackerjacks" and confided to a few personal friends that as he had turkey-trotted all summer his muscles were in such fine shape that a surprise was due; and the surprise was promptly forthcoming. Wetmore won the race puffing but "sitting up." The other three contenders were scarcely in sight; they were backpedaling in order that Victory might perch on the Wetmore shoulders. When the "thirty-niner" realized the truth, he took it as befits his merry nature and insisted that the cup—they had cups for nearly every winner—should be awarded to Wells, who finished second. It is now understood that Batchelder, Wetmore and Reeves will be declared professionals and that all of the "racers" will be suspended for life for participating in an unsanctioned contest.

They had a baseball game, which was won by R. H. Johnston's "White Hopes," and a tennis match, which was captured by David McLaughlin Beecroft and T. Clothier Lay. They also had an alleged fat men's race, which was won by Dan C. Swander, the Firestone manager, and a sack race, won by E. R. Waterman, of the Hartford Suspension Co.; also a tire rolling contest, which went to A. Griener, the Gaulois tire man, whose prize, incidentally, was a G & J tire; and they had potato races, three-legged races and pretty nearly everything else which comes under the head of sport or fun. In fact, the whole affair proved a big boost for the Big Boosters.



TIRE ROLLING NOT AS EASY AS IT SOUNDS



STRUGGLE OF FAT MEN AND THE ALMOST-FATS



HON. MITCHELL MAY AS A "SPORT"

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RICKENBACHER WINS MAIN EVENT IN LATONIA RACEMEET

Accounts for Century Grind in a Mason and also Captures Shorter Race — Bad Spill Stops a Local Pilot.

Edward Rickenbacher was easily the bright particular star of the racemeet that was staged on the Latonia (Ky.) mile track by the Cincinnati (O.) Automobile Club on Saturday last, for he won both the feature event on the program, which went for 100 miles, and also accounted for a 10-mile race; as usual, he drove a Mason car. Rainey and Radina won the other two events that made up the card.

Despite the fact that the track was in excellent condition, recent rain serving to harden the surface, one serious accident occurred in the 100-mile race and several minor skids and slides served to add interest to the other events, none of which proved particularly exciting from a racing point of view. Nick Nickles, at the wheel of a Fiat, crashed through the fence when he had half completed the century race, wrecking his car and sustaining injuries that are likely to keep him in the hospital for some time to come. Cotton Shuster, his mechanician, also was badly cut and bruised.

Nickles's accident, and another that put Max Selzer, Mercer Pilot, out of the running—it was caused by a burst tire and no one was hurt—furnished about the only thrills in the 100-mile race, for once Rickenbacker got the lead, and he got it early, he never was headed and finished six minutes ahead of Lutrell. The summary:

One hundred miles—Won by Ed. Rickenbacher, Mason; second, G. W. Luttrell, Mercer; third, Wm. Chandler, Mason, fourth, Fred Radina, Cino. Time, 1:42:00.

Twenty-five miles—Won by Radina, Cino; second, Chandler, Mason; third, Luttrell. Time, 25:57.

Ten miles—Won by Rickenbacher, Mason; second, Horace Heisey, Buick; third, F. Smith, Buick. Time, 10:49.

Five Miles—Won by John Raimey, Cino; second, Radina, Cino; third, M. S. Britt, Schacht. Time, 4:55.

Oldfield's Rejected Record Now Accepted.

Reversing its own decision rejecting Barney Oldfield's claim to the world's record for one mile on a one-mile circular dirt track, the Contest Board of the American Automobile Association, at a special meeting held last week, has allowed the record, which stands at 46⅗ seconds and was made with the old Christie front-drive car at Bakersfield, Cal., on April 22 last. Originally the record was rejected because it was deemed that the Pendleton timing device that was used was insufficient evidence because the starting and stopping times of the car were not printed on a paper tape, instead, the passage of the car over the timing wire established electrical connections which caused a trigger to stop three watches.

Lacks Hands but Drives a Car.

Many a novice taking his first driving lesson becomes convinced, for the time being, that he has only about half enough arms and legs to take care of the levers and pedals which, to his eye, are put in wherever there is room. But while a little experience serves to dispel first impressions,



ZIBBELL'S CONTROL APPARATUS

even an experienced driver would be "stumped" to handle a car were he to be deprived of the use of both hands, one arm and one leg, as was W. Zibbell, of Fresno, Cal., who came out of a railroad accident with his left arm, right hand and left leg missing. By the use of ingenious control devices, however, Zibbell manages to drive his Paige "36" as well as many a man who has a complete anatomy; he is of an ingenious turn of mind, and has worked out his own schemes.

Disbrow Drives Fast on Half-Mile Track.

Louis Disbrow, who, as nearly every one knows, has been driving Case cars—and driving them fast—nearly all over the United States, gave the natives of Toledo, O., a couple of genuine thrills on Saturday last, when he whirled twice around the half-mile Lucas County Fair Grounds track in 1:06⅗. Needless to add, he was promptly credited with a "world's record," despite the fact that the A. A. A. takes no notice of marks set up on half-mile tracks.

ANOTHER "NEAR RECORD" ESTABLISHED BY BURMAN

Drives Fast at Milwaukee But Not Fast Enough to Lower His Own Mark—Takes Four of Five Events, as Usual.

Ernie Moross and his following of racing drivers invaded Milwaukee on Saturday last and might have set up another new "world's record" except for the fact that they did not. Burman, Moross's star performer, drove his big Benz around the mile Fair Grounds track in the lightning fast time of 48 seconds in a time trial, and the officials were considerate enough of home pride to announce it as a record despite the fact that Burman has a record of having driven a mile on the Brighton Beach track in 47.85. The announcement of the "record" probably caused more excitement than did anything else, for none of the races, only one of which escaped Burman, by the way, were calculated to make one's blood boil. The summary:

One mile time trials—Won by Burman, Benz (48 sec.); Benedict, Mercedes (57 sec.); Steel, Mercer (1:07).

Three miles, free-for-all—Won by Burman, Benz; second, Goetz, Endicott special. Time, 3:08½.

Three miles—Won by Burman, Benz; second, Goetz, Endicott special. Time, 3:26.

Three miles, free-for-all, open—Won by Burman, Benz; second, Goetz, Endicott special. Time, 3:08½.

Three miles, free-for-all, handicap—Won by Benedict, Mercedes; second, Burman, Mercedes. Time, 3:09¾.

Law Looks Askance at Spare Tires.

Something in the way of a rearrangement of the spare tires on cars that carry those appurtenances on the rear of the body in such a way as to obstruct the view of the license tag will be necessary if New Jersey users of automobiles are going to keep out of reach of the long arm of the law, for Job H. Lippincott, State Commissioner of Motor Vehicles, has ordered his inspectors to stop all cars in which the spare tires—or, for that matter, anything else that is carried—prevent the limbs of the law from taking observations of numbers or interferes with the proper placing of the tail lights. The commissioner is acting upon the authority of the motor vehicle law of 1906, and is very much in earnest. Police activity also is to be increased in preventing speeding on Saturdays and Sundays, inspectors having been detailed to assist the municipal police in the enforcement of the law.

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1,054,118. Resilient Wheel. Stephen Hipkins, Martins Ferry, Ohio. Filed Aug. 30, 1911. Serial No. 646,869. (Disk wheel with short radial springs and equalizing levers.) 3 claims.

1,054,171. Tire-Holder. Henry Buermann, Newark, N. J. Filed May 6, 1912. Serial No. 695,356. (Sheet metal spare tire holder.) 3 claims.

1,054,205. Internal-Combustion Engine. Louis Illmer, Jr., Reading, Pa., and Edward J. Kunze, East Lansing, Mich., assignors to Illmer Gas Engine Co., a corporation of Delaware. Original application filed Feb. 4, 1904, Serial No. 191,968. Renewed April 12, 1912, Serial No. 690,314. Divided and this application filed Aug. 29, 1912. Serial No. 717,703. (Scavenging motor.) 7 claims.

1,054,219. Electrical-Circuit Controller. Joseph H. Lehman, New York, N. Y. Filed April 23, 1908. Serial No. 428,871. (Eccentric timer with ball bearing contact ring.) 2 claims.

1,054,262. Wrist-Pin and Fastener for Pistons. Geo. E. Wilson, Stillwater, Minn., assignor to M. Rumely Co., Laporte, Ind., a corporation of Indiana. Filed Oct. 13, 1911. Serial No. 654,497. (Piston pin with expanding ends.) 5 claims.

1,054,303. Engine-Starter for Automobiles. Frank Grove McKlveen and Leslie Wilfred Naylor, Denver, Col., said Naylor assignor to said McKlveen. Filed Jan. 12, 1912. Serial No. 670,953. (Lever, chain and sprocket starting device.) 6 claims.

1,054,312. Sectional Pneumatic Tire. Morton Peabody Prince, Cambridge, and Clement M. Bernheimer, Newburyport, Mass. Filed Jan. 15, 1912. Serial No. 671,381. (Pneumatic tire with sectional casing and removable sectional tubes.) 5 claims.

1,054,314. Motor Truck. Howard S. Riddle, Columbus, Ohio, assignor, by mesne assignments, to The Jeffrey Mfg. Co., a corporation of Ohio. Filed April 14, 1906. Serial No. 311,627. (Power and driving system for rail vehicles.) 8 claims.

1,054,346. Automatic Change-Speed Gearing. Chalmers G. Hall, Fort Leavenworth, Kans. Filed Jan. 13, 1912. Serial No. 671,000. (Sliding gears controlled by springs.) 5 claims.

1,054,398. Apparatus for Recording Speeds of Vehicles. August Ernst Carl Deckert, Dresden, Germany. Filed Aug. 8, 1912. Serial No. 714,111. (Automatic printing speed recorder.) 3 claims.

1,054,444. Resilient Tire for Wheels. Etienne Louis Auguste Olivier, Paris, France. Filed Jan. 3, 1907. Serial No. 350,660. (Cushion tire with internal springs.) 1 claim.

1,054,501. Spring-Wheel. Silenus D. Brooks, Oneonta, N. Y., assignor of one-half to Charles N. Murdock, Oneonta, N. Y. Filed Aug. 19, 1912. Serial No. 715,887. (Spokes cushioned by helical springs.) 2 claims.

1,054,504. Means for Tire Inflation. Louis Burgraff, Jr., Mason City, Iowa. Filed Sept. 7, 1911. Serial No. 648,090. (Air carried to tire through wheel hub.) 1 claim.

1,054,510. Automobile-Fender. William A. Crawford-Frost, Baltimore, Md. Filed Dec. 6, 1911. Serial No. 664,246. (Fender with double set of helical springs.) 1 claim.

1,054,533. Gasolene-Tank Outlet. George J. Greiner, Detroit, Mich. Filed Aug. 28, 1912. Serial No. 717,594. (Reserve supply control valve.) 1 claim.

1,054,587. Spring-Wheel. Oliver P. McKee, Waukesha, Wis. Filed Nov. 7, 1912. Serial No. 730,062. (Springs between inner and outer rims.) 1 claim.

1,054,590. Elastic Suspension for the Driving-Wheels of Motor Cars. Daniel Mesure, Var, France. Original application filed Feb. 14, 1912, Serial No. 677,607. Divided and this application filed Aug. 28, 1912. Serial No. 717,475. (Suspension by coil springs working in guides.) 1 claim.

1,054,592. Engine-Hood Cover. Clinton D. Miller, Washington, D. C. Filed Oct. 10, 1912. Serial No. 724,958. (Hood with movable flaps for front opening.) 2 claims.

1,054,609. Cultivator. William Jerome Perry, Castlegar, British Columbia, Canada, assignor of one-fourth to William Scheffer, Castlegar, British Columbia, Canada. Filed Dec. 13, 1911. Serial No. 665,580. (Depth regulator for motor plow.) 1 claim.

1,054,640. Automatic Braking Device for Automobiles. Joel Ellis Fisher, Jr., New Haven, Conn. Filed March 31, 1911. Serial No. 618,057. (Automatic brake applied by racing of driving wheels.) 11 claims.

1,054,641. Combustion-Engine of the Injection Type. Ludwig Gentzen, Mulheim-on-the-Rhine, Germany. Filed Jan. 10, 1911. Serial No. 601,843. (Fuel injection valve.) 1 claim.

1,054,649. Automobile-Tractor. Frederic Edouard Edmond Leferver, Rouen, France. Filed May 16, 1911. Serial No. 627,537. (Caterpillar type tractor with link-track device.) 5 claims.

1,054,679. Demountable Rim for Resilient Wheels. Sydney Allen Currin, Bristol, England. Filed April 14, 1911. Serial No. 621,146. (Demountable rim and fastenings for wire wheels.) 1 claim.

1,054,692. Automobile-Wheel. George A. Imhoff, Carrington, N. D. Filed Jan. 10, 1912. Serial No. 670,455. (Resilient wheel with two concentric parts and coil springs between.) 1 claim.

1,054,703. Gearing. Thomas Alexander Maxwell, Whigham, Ga. Filed March 14, 1912. Serial No. 683,777. (Friction drive system for cultivator.) 2 claims.

1,054,714. Valve-Gear for Explosion-Motors. Louis Renault, Billancourt, France. Filed July 10, 1911. Serial No. 673,754. (Reciprocating sleeve valve.) 3 claims.

1,054,729. Rotary Explosive-Engine. James Whittinghill and Elijah W. Richmond, Advance, Mo. Filed July 3, 1912. Serial No. 707,594. (Rotary motor with cylinders and pistons for supplying charges.) 1 claim.

1,054,746. Lamp-Socket. Walter E. Christian, Kenosha, Wis., assignor to the Badger Brass Mfg. Co., Kenosha, Wis., a corporation of Wisconsin. Filed May 27, 1912. Serial No. 699,903. (Electric lamp with means for adjusting position of bulb.) 5 claims.

1,054,747. Lamp. Walter E. Christian, Kenosha, Wis., assignor to the Badger Brass Mfg. Co., Kenosha, Wis., a corporation of Wisconsin. Filed June 17, 1912. Serial No. 704,046. (Electric lamp with reflector detachably attached to door.) 8 claims.

1,054,755. Automobile-Seat. Arthur F. Draper, Berkeley, Cal. Filed Feb. 16, 1910. Serial No. 544,217. (Rear seat for cars of the runabout type.) 12 claims.

1,054,762. Automobile-Pump. Richard Anton Goeth, Robert B. Rodgers, and John Albert Dittmar, San Antonio, Tex. Filed April 26, 1912. Serial No. 693,410. (Air pump operated by rear wheel of car.) 7 claims.

1,054,808. Hydrocarbon Motor. Sidney D. Waldon, Detroit, Mich., assignor to Packard Motor Car Co., Detroit, Mich., a corporation of Michigan. Filed March 23, 1912. Serial No. 685,874. (Automatic governor for lubricating oil pump.) 12 claims.

1,054,820. Tire with Detachable Tread. Junius A. Bowden, Los Angeles, Cal. Filed March 9, 1910. Serial No. 548,313. (Detchable tread with wire fastenings.) 8 claims.

1,054,831. Draft Appliance for Automobiles. Gay Victor De Peel, Crocker, S. D. Filed March 18, 1912. Serial No. 684,429. (Windlass on rear wheel and cable guide at front of car.) 2 claims.

1,054,903. Taximeter. Wilhelm Gustav Bruhn, Berlin, Germany. Filed Sept. 27, 1910. Serial No. 584,087. (Taximeter with sliding device for disconnecting gears.) 5 claims.

1,054,909. Spark-Plug Tester. Adolfo de Clairmont, Toledo, Ohio. Filed Oct. 3, 1911. Serial No. 652,614. (Spark gap device.) 7 claims.

1,054,942. Means for Retaining the Wristpins of Pistons. Foster C. Rhoads and Hugh A. Leis, Dayton, Ohio. Filed June 5, 1912. Serial No. 701,803. (Spring-pressed ball catch for piston pins.) 1 claim.

1,054,975. Auxiliary Steering-Gear for Vehicles. John D. Maxfield, Hemet, Cal. Filed March 13, 1911. Serial No. 614,558. (Emergency steering device.) 4 claims.

1,054,980. Tire Attachment. Ralph L. Morgan, Worcester, Mass. Filed April 3, 1912. Serial No. 688,341. (Coil spring fastening for dual tires.) 3 claims.

1,054,996. Magnetic Speedometer. John K. Stewart, Chicago, Ill., assignor to Stewart-Warner Speedometer Corporation, of the State of Virginia. Filed Aug. 18, 1911. Serial No. 644,732. (Magnetic adjustment for magnetic speedometer.) 6 claims.

1,054,997. Magnetic Speedometer. John K. Stewart, Chicago, Ill., assignor to Stewart-Warner Speedometer Corporation, of the State of Virginia. Filed June 4, 1912. Serial No. 701,695. (Magnetic adjustment for magnetic speedometer.) 4 claims.

1,055,010. Traction Vehicle. Robert E. Zager Hardy, Cal. Filed Jan. 12, 1912. Serial No. 670,808. (Four-wheel drive system.) 2 claims.

1,055,017. Lubricating System for Automobile Transmission Mechanism. Alanson P. Brush, Flint, Mich. Filed May 8, 1911. Serial No. 625,868. (Partition system for lubrication of transmission gears in unit power plant.) 3 claims.

1,055,026. Spring-Hub Wheel for Automobiles. Geo. K. Ewing and Colby R. Farley, Ewington, Ohio. Filed June 26, 1912. Serial No. 705,994. (Resilient hub with helical springs.) 2 claims.

1,055,042. Carburetter. William H. C. Higgins, Jr., Laporte, Ind., assignor to M. Rumely Co., Laporte, Ind., a corporation of Indiana. Filed Aug. 20, 1910. Serial No. 578,172. (Heavy oil carburetter with iris fuel valve.) 1 claim.

1,055,057. Automobile Fender. George E. Legendre, Chicago, Ill. Filed Jan. 19, 1912. Serial No. 672,161. (Buffer with spring backing.) 1 claim.

1,055,069. Gasolene-Engine. Daniel H. Muir, Lincoln, Neb. Filed June 20, 1911. Serial No. 634,351. (Two concentric cylinders with piston in space between them.) 6 claims.

1,055,071. Means for Controlling and Regulating the Operation of Clutches. Clark W. Parker, Springfield, Mass., assignor to Parker Transmission & Appliance Co., Springfield, Mass., a corporation of Massachusetts. Filed Dec. 28, 1910. Serial No. 599,690. (Dashpot control of clutch movement.) 4 claims.

1,055,084. Carburetter. Edward A. Rumely, Laporte, Ind., assignor to M. Rumely Co., Laporte, Ind., a corporation of Indiana. Filed Jan. 10, 1910. Serial No. 537,202. (Regulating port for air admission.) 6 claims.

1,055,085. Tractor. Edward A. Rumely, Laporte, Ind., assignor to M. Rumely Co., Laporte, Ind., a corporation of Indiana. Filed April 11, 1912. Serial No. 690,164. (Means for equalizing slip of driving wheels of tractors.) 7 claims.

1,055,101. Shield for Driving-Gear of Motor Vehicles. John W. Thompson, Brent, Ala. Filed April 12, 1912. Serial No. 690,282. (Casing for gears of combined driving and steering wheels.) 1 claim.

1,055,120. Explosive-Engine. Joseph H. Daniel Beaucage, Pittsfield, Mass. Filed Dec. 14, 1911. Serial No. 665,598. (Rotary valve motor.) 6 claims.

1,055,164. Shock-Absorber. Fulton A. Green, Kittanning, Pa. Filed Sept. 13, 1911. Serial No. 649,095. (Hydraulic shock absorber.) 1 claim.

1,055,225. Dirigible Automobile Light-Support. Julius Marion Raiky, Coffeeville, Miss., assignor of one-half to C. K. Bailey, Coffeeville, Miss. Filed Oct. 14, 1912. Serial No. 725,573. (Headlights movable by steering gear.) 1 claim.

1,055,313. Steering Mechanism. James E. Briggs, Waterloo, Iowa. Filed April 17, 1911. Serial No. 621,699. (Pinion-and-sector steering mechanism.) 1 claim.

1,055,314. Spring Suspension for Vehicles. Ettore Bugatti, Molsheim, Germany. Filed Dec. 29, 1911. Serial No. 668,498. (System of single armed springs.) 3 claims.

1,055,333. Resilient Wheel. Emil J. Kreis, Mendota, Ill. Filed April 12, 1911. Serial No. 620,544. Renewed Sept. 12, 1912. Serial No. 720,089. (Tire backed by helical springs.) 5 claims.

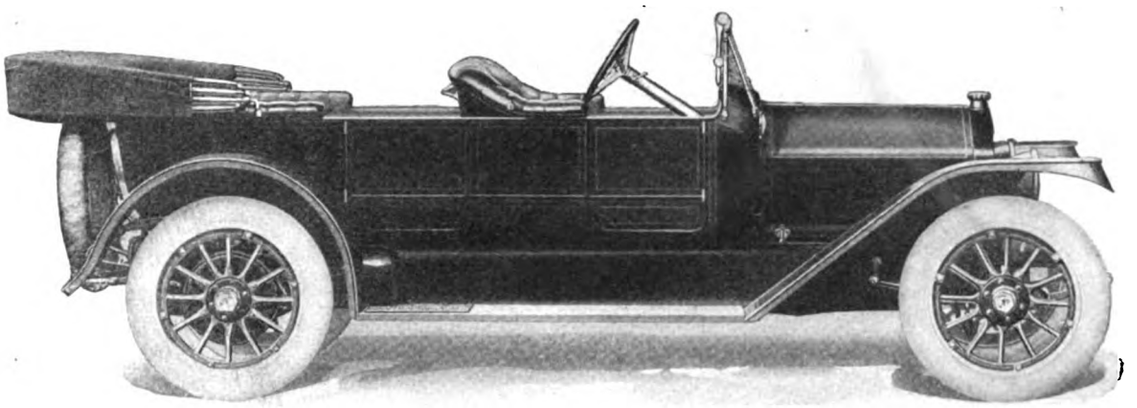
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Holds World's Stock Championship

National

Holds World's Record for Fastest 500 Miles in Competition

Once a National dealer, always a National dealer



Electric started and lighted; not only left side drive but *access* to both front doors

New series V-3—five models, $2750 to $3400

Motors 1640 miles, from Indianapolis to San Antonio, Texas, to convince one customer

National Motor Vehicle Co.,
Indianapolis, Ind.

Gentlemen:

We arrived in San Antonio, Saturday night.

The *National* is all you claim it to be and *then some.* I do not think there is another car made that could come over the same road and make the same number of miles we did, with as much ease.

We encountered sand, mud, rocks, stumps, rain and everything else it takes to make a bad road. The car was never in distress and never *missed a stroke the whole time.*

We drove 1640 miles from your factory at Indianapolis to San Antonio, *averaging 200 miles per day*, from start to finish, which I think was very good considering the condition of the roads.

Col. Tinnin is highly pleased with the car and claims it is the only car that could have made the trip without help.

I have always *believed* the *National* to be the best car make and now I *know* it.

Very truly yours,
R. M. Yantis.

The accompaning letter is from our *National* dealer in San Antonio, Texas, who brought a customer to our factory at Indianapolis. The customer, Col. Tinnin, bought the car after seeing our modern factory and improved processes of manufacturing. They then decided to drive the *National* home, with the results as stated.

Dealers' opportunity—New Series V-3 now ready—write us

The *National* is the dealer's best car because it will satisfy your customers. Let us prove this—write today for full information regarding our New Series V-3—we can make *immediate delivery.* Don't tie up with anyone till you get our Special Offer to Live Dealers.

***National*—the car that maintains its leadership**

National Motor Vehicle Co., Dept. 90, Indianapolis, Ind.

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Unexcelled American Genius
Unexcelled American Skill
Unexcelled American Manufacturing Processes

have produced the Unexcelled, American-made, New Departure ball bearing — the bearing that has proved its superiority by actual service in 80 per cent. of American-made motor cars.

Three Types:

Double Row — A two-purpose bearing of maximum capacity for both radial and thrust loads.

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Engineering consultation service at your command. Send us your blueprints, speed and load data and we will tell you what size and type of bearing will best do your work with greatest efficiency and least friction and wear.

"Elimination of Friction" brochure, now in third edition, discusses the relative merits of balls and rollers in bearing work. A copy will be sent you free on request.

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Bristol, Conn.
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"New Departure Ball Bearing Manual" full of information for the garage man and dealer, just off the press. The only book of its kind. Ask us for it.

Special data sheets on New Departure Self Aligning Shaft Hangings and use of New Departure Ball Bearings in machine tools sent free on request. Address New Departure Mfg. Co., Hartford Division, Hartford, Conn. for them.

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to Automobile Manufacturers Who Have Contracted for



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TUTO HORN

LOOK FOR
Elyria-Dean
TRADE MARK
WHERE QUALITY'S SEEN

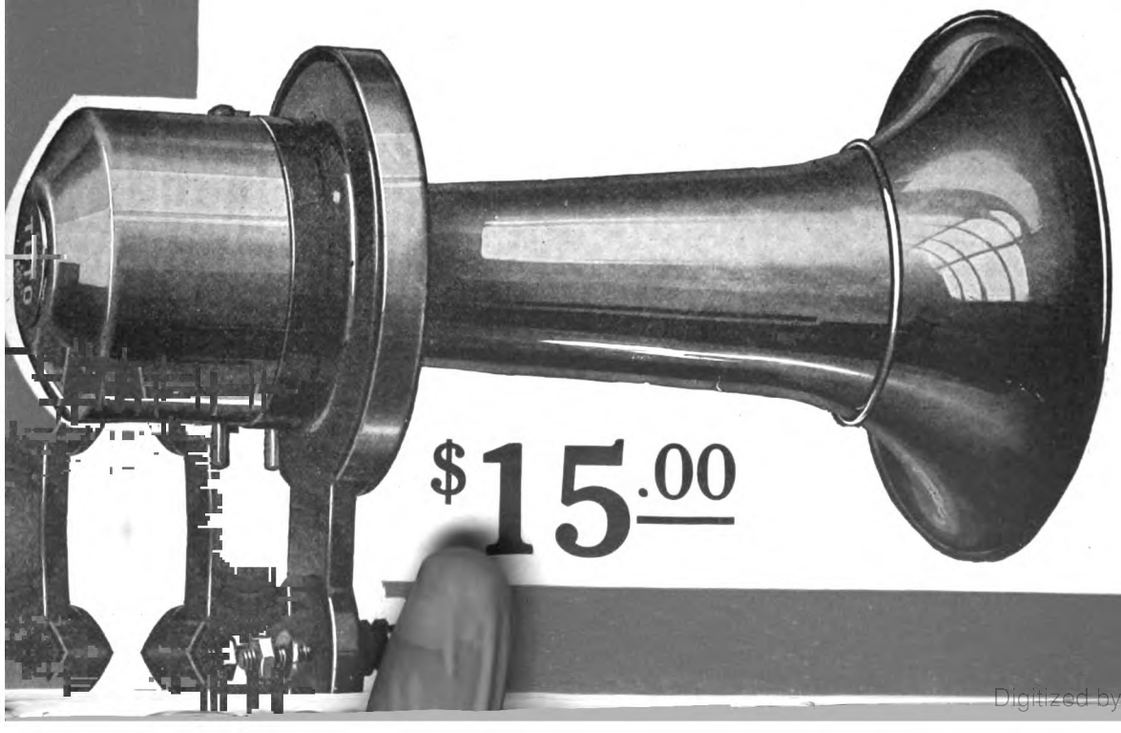
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In the sale of accessories it is well to place your independence on a STANDARDIZED article, one of known merit. An accessory so universally indorsed that the car owner will show no hesitancy when the name is before him.

In the Sale of Warning Signals – ELYRIA-DEAN Is Standardized

The name alone is a guarantee of faithful performance. The product is known, it is accepted by the OWNERS and INDUSTRY alike as a superior warning signal.

When car owners ask for a warning signal by name the ELYRIA-DEAN WARNING SIGNALS—TUTO HORN and REXO HORN—are not difficult to remember. They are backed by a general publicity campaign that must make them the first thought when one thinks of Warning Signals.



$15.00

THE DEAN ELECTRIC COMPANY

501 Olive Street
ELYRIA OHIO

Kansas City, Mo.
San Francisco, Cal.

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DEALERS!

DO YOU REALLY KNOW WHAT THE ELYRIA-DEAN ACCESSORIES MEAN TO YOU?

REXO HORN

LOOK FOR
Elyria-Dean
TRADE MARK
WHERE QUALITY'S SEEN

With the DEAN line you are fortified with every warning signal argument. Without it you are inviting your customers to look elsewhere for the signal THEY KNOW to be the best.

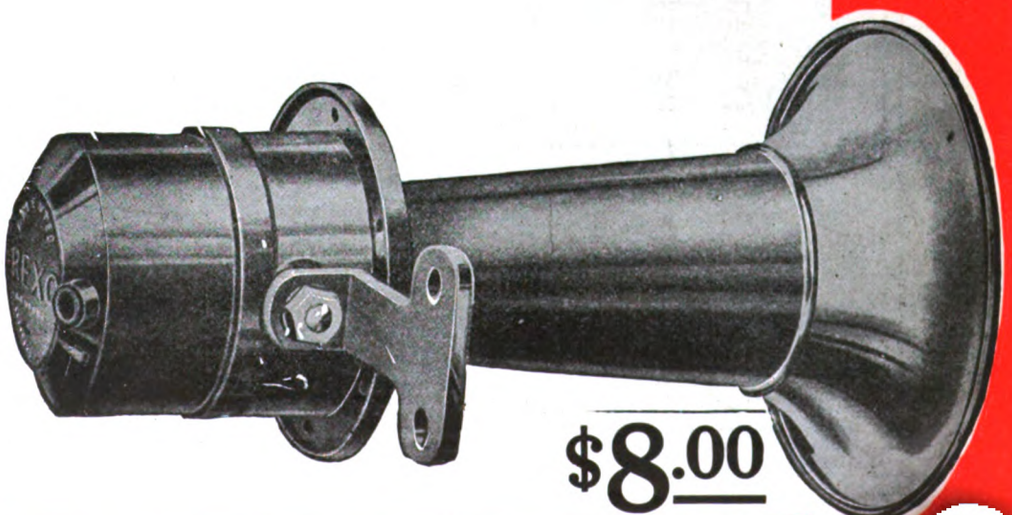
The combined line permits you to offer just the right signal for small or large cars alike, the warning note produced plus the list price asked is a successful counter-argument against all competition.

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An Invitation to Manufacturers of Electric Lighting Systems

Certain manufacturers of electric lighting systems have endeavored to overcome the showing of the Speedway Tests by preparing mysterious charts of engineering curves and making plenty of lead pencil figures.

Anyone can test the proposition of "miles per gallon" with a lead pencil. But it can be done more accurately with an automobile.

We cordially invite any manufacturer of electric lighting equipment who wants to prove its power consumption on these Speedway curves to bring a car with his equipment to the Speedway and give it a practical test.

We shall be glad to furnish the gasoline and all necessary mechanical help. We also have two electrical engineers and a few electricians whom we have found handy in case of electrical troubles on cars being tested.

The only recompense we ask is a copy of the report of the test, certified by the manufacturer of the electric equipment.

Here is a splendid opportunity for any electric lighting equipment manufacturer to show whether his lead pencil theory will hold together on the brick speedway.

"What is the BEST Light for My Car?"

Here is an accurate analysis of automobile lighting systems.

It tells **facts**—

Not theoretical "curves" or technical "figures" but—

Real tests of cars in service—indisputable information about the best light for your car.

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It proves why Prest-O-Lite is more reliable, just as convenient and gives a better quality of light than any electric system.

It shows why some automobile manufacturers use electric equipment.

It gives inside facts about self-starters.

It recounts real results of the experience of owners with electric lights.

These FACTS Save You Time, Money, Trouble.

If you own a car or buy one you will benefit by every page.

Here is the evidence.

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The Prest-O-Lite Co., Inc.

287 Speedway
INDIANAPOLIS, IND.



The new Prest-O-Lite factory, which multiplied our capacity 4 times, is running to the limit endeavoring to keep up with the demand for Prest-O-Lite.

The Prest-O-Lite Co., Inc.,
287 Speedway, Indianapolis, Indiana.

Please send facts on lighting systems and reports of tests to—

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Address .....

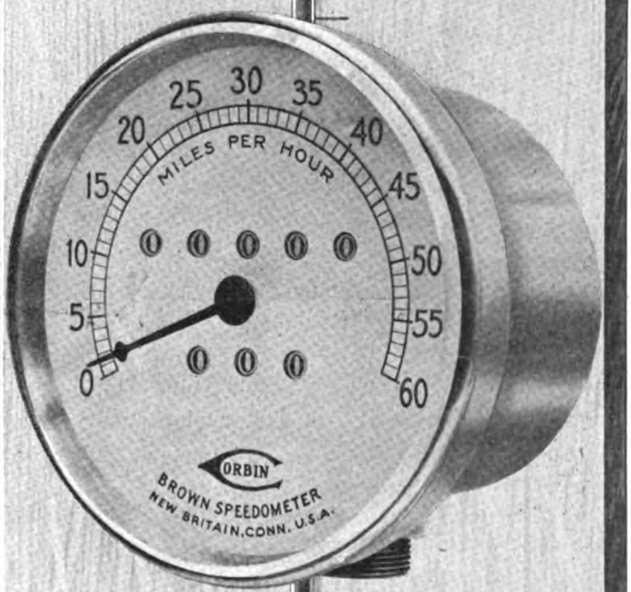
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Whether the Mercury is high or low—

CORBIN-BROWN SPEEDOMETER

"The Speedometer of Absolute Accuracy"

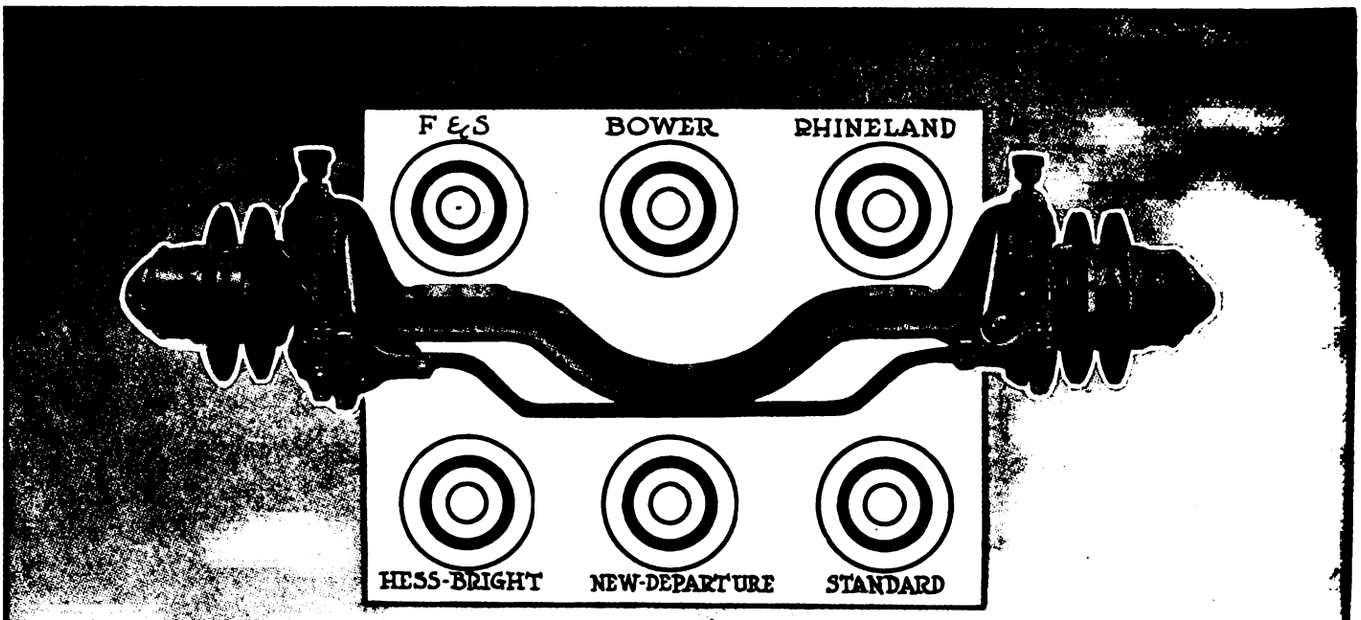


Because built on the centrifugal principle, climatic changes never affect its accuracy

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For years Sheldon Truck axles have been the undisputed leaders in the field. But we realized that to attain supremacy is one thing; to maintain it is another.

Every Sheldon Axle which leaves our factory is of unvarying perfection.

We are continually striving to improve and perfect wherever it is possible to do so.

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Standard Taper Roller Bearings,
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Schafer,
Norma Roller,
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Or single row in any type desired.

We leave the manufacture of bearings to the specialist and make the axles as well as infinite care and unlimited experience can make them.

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WILKES-BARRE, PA.

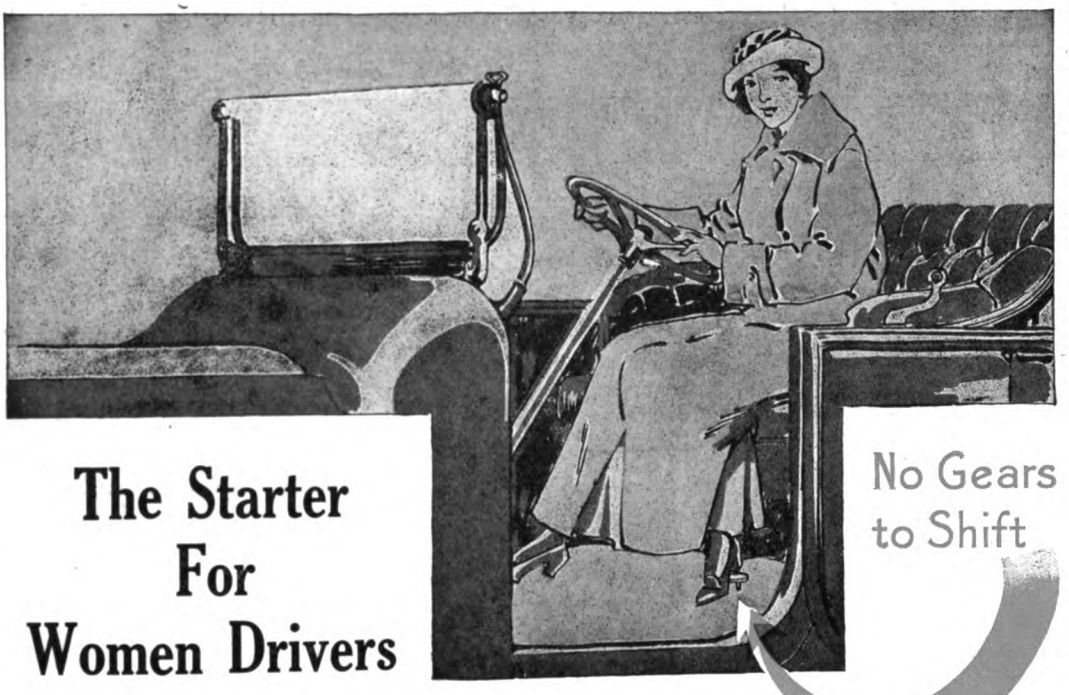
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The Starter For Women Drivers

No Gears to Shift

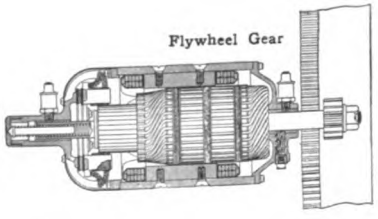
When a woman purchases a self-starting car from you for her own use, are you glad or sorry?

It depends a good deal on the starter, doesn't it?

The **sale** may depend only on how prettily the starter works while it is nice and new. But the **profits** of that sale will depend entirely on what the starter takes a notion to do six months or a year later! Unless it will come up smiling under the same sort of casual treatment that her carpet sweeper or vacuum cleaner receives, it might better not be on the car.

If the commutator is going to burn up, or if the clutch is going to slip, the ratchet drive to stick, or the intermediate gears to wear out, **you will have to make good** even if it costs the profits of several sales to do it. And your real happiness will not begin before She is satisfied.

The RUSHMORE STARTER



gears directly to the flywheel, eliminating all the usual intermediate gearing, friction clutches and ratchet drives. It engages the flywheel gear **automatically** when the foot button is pressed, and disengages **automatically** the instant the engine starts. Its compactness, small weight, great power and freedom from trappy wearing parts make it the ideal solution of the starter problem.

The Rushmore Dynamo is as simple, scientific and dependable as the Starter.

Rushmore Dynamo Works, Plainfield, N. J.

LONDON PARIS BERLIN

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PROFITS ? PROFITS

COX CARBON OXYGEN CLEANER

There are hundreds of lines of goods on the market, all more or less useful and desired by the motorist—some of which net the dealer and garageman a good profit—others a small margin by reason of their being little used.

Every motorist knows the desirability, the necessity even, of having the carbon cleaned from his motor every once-in-so-often. The demand for this service is constant—it is increasing. It is increasing because of the poor grade of commercial gasolene—because motorists know they can lengthen the life of their motors by keeping them free from carbon deposits.

Does this kind of work pay? If done by the antiquated method of scraping the cylinders, probably not. At least, the results, unless the job is very, very carefully done—at the expense of a lot of time and patience—are not always satisfactory.

At any rate, the time tickets show. Note the time ticket showing what an exorbitant charge must be made to yield you a narrow margin of profit.



Workman removes spark plug, turns on oxygen — regulates its flow by gauge and valve — inserts nozzle in spark plug opening and ignites gas with piece of burning paper. By feeding the flame about the walls and valve ports of a cylinder every vestige of carbon is consumed, leaving no sediment. Guaranteed to cause not the slightest harm to motor.

REPAIR TICKET

Remove carbon from cylinders — scrape — 4 cyl. motor

Mechanic A. Smith

DATE	STARTED	FINISHED	HRS
10/1	8:00 A.M.	5:00 P.M.	8
Total Hrs.			8

THE OLD WAY

Figuring labor as low as $15 a week, you can't make money and do a first class job, at $1 per cylinder.

Then consider the new way—far more satisfactory to your customer—because it doesn't necessitate holding up his car more than an hour or so—because the charge of $1 per cylinder is reasonable enough and because the job is always perfectly satisfactory—when the carbon is burned away by a Cox Oxygen Carbon Cleaner.

The picture shows how burning oxygen gas is fed into a cylinder through the spark plug opening by a nozzle. One tank contains enough gas to clean from 35 to 40 cylinders perfectly. The burning oxygen is guaranteed not to cause the slightest harm to a motor. A tank of oxygen costs $2—the tank itself is loaned to you.

Then note the time ticket when a Cox Oxygen Carbon Cleaner is used. It tells the story.

Write or wire for further particulars—don't delay.

REPAIR TICKET

Remove carbon from cylinders - Use Cox Oxygen Carbon Cleaner - 4 Cyl.

Mechanic Jimmy

DATE	STARTED	FINISHED	HRS
10/15	8:00 A.M.	8:45 A.M.	3/4
Total Hrs.			3/4

THE NEW WAY

From 6 to 10 minutes per cylinder is all the time required. All jobs uniform and guaranteed 1000% better than by scraping.

COX BRASS MFG. COMPANY, Albany, N. Y.

1777 Broadway, New York **870 Woodward Avenue, Detroit**

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Stewart Speedometer
MAGNETIC PRINCIPLE

A Tip From England

Writing about an American speedometer of the centrifugal type, a correspondent of an English paper, "The Autocar," says:

"I found it telling some very black lies. It was generally fairly consistent, being slow below 25 m. p. h. and fast (exceedingly so at high speeds) above this figure. At 50 m. p. h. it would read 60 m. p. h., but the hand was rarely steady."

The above shows that they are realizing in England, as they have *already* realized in this country---the practical superiority of the MAGNETIC speedometer. Witness the fact that the magnetic Stewart Speedometer is outselling all other makes at the ratio of 4 to 1. The majority of motorists want to know *exactly*, and the Stewart is telling them.

It will pay you to have a Stewart on your car.

The Stewart Speedometer Factory
1949 Diversey Boulevard Chicago, U. S. A.

Service Stations in all important cities all over the world

The most popular Speedometer in the World

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Ohio

Models for 1914

Model "4-35"
5 Passenger, $1275

Model "6-60"
5 Passenger $1985



Illustrating the Ohio "4-35"
Price $1275

NORTHWAY'S LATEST AND GREATEST ACHIEVEMENT

Crowning glory of his greatest of great successes.
Standard of the world.

After years of experience, exhaustive tests and expensive experiments, the greatest of all designers and inventors, Mr. R. E. Northway, the founder of the Northway Motor Company, and original designer of that now famous motor, acknowledged by the best engineers and motor experts to be the greatest motor in the world, now brings out his very latest and greatest of all motors, to be used exclusively by the Crescent Motor Company, of Cincinnati, Ohio.

Ohio Model, 4¼ x 4¾, with 116-inch wheelbase, 34 x 4 tires, equipped with everything, including electric starter, lights and horn, at $1275.00.

"Model Royal," six cylinder, 4 x 6, with 132-inch wheel base, full floating axle, fully equipped with everything, inclusive of electric starter, lights and horn, at $1985.00.

Ohio "4-35," Five Passenger
Price $1275

Motor—4¼ x 4¾.
Axles—Full floating on annular bearings.
Transmission—Three speeds and reverse.
Clutch—Multiple disc.
Inside control; right hand drive.
Speedometer—Stewart.
Rims—Demountable.
Tires—34 x 4.
Wheel Base—116 inches.

"Model Royal," Five Passenger,
"6-60," Price $1985

Motor—4 x 6.
Axles—Full floating on annular bearings.
Transmission—Four speeds and reverse, direct on fourth.
Clutch—Multiple disc.
Center control; left hand drive.
Speedometer—Warner, flush type.
Rims—Firestone demountable.
Tires—35 x 4½.
Wheel Base—132 inches.

Almost too good to be true. Nevertheless it is true, for here it is, and we are now ready to contract with good, live, wide-awake dealers. See us at once and make your arrangements before territory is all taken. This is absolutely the best proposition ever offered.

Address all communications to

C. D. PAXSON, Gen. Sales Mgr.
1900 Euclid Ave., Cleveland, Ohio

Factory: Crescent Motor Company
R. E. NORTHWAY, President
Cincinnati, Ohio

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INSIST UPON THE REDTAG



ACCEPT NO SUBSTITUTE FOR PLATINUM POINTED

Mosler Spit Fire Plugs

Genuine Platinum Point
Guaranteed Forever

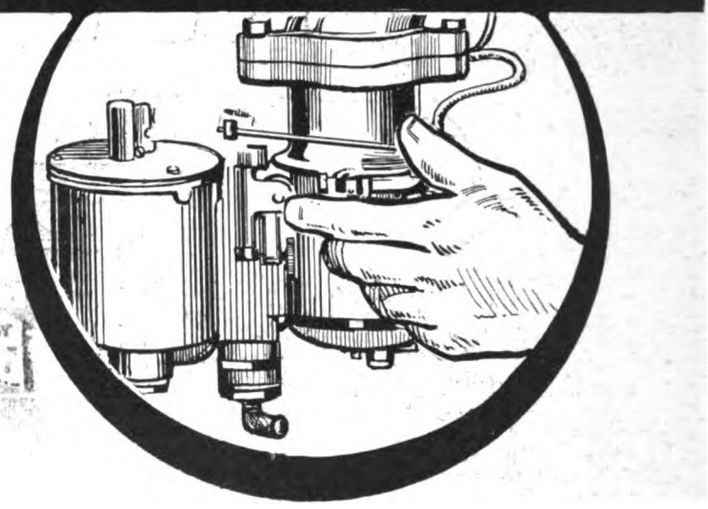
Energetic Ignition Greater Power

A. R. MOSLER & CO. P.O. Box "M," MT. VERNON, N. Y.

503

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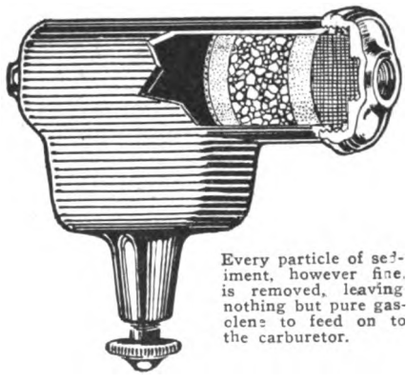
Let it alone



A man buys an automobile from you, a good car, one with standard parts and one which the makers equipped with what they considered the best carburetor made; still the man has carburetor trouble. Is the carburetor to blame for all the "Carburetor Trouble"? Can it be possible that inventors and engineers have been able to develop motors, ignition, self-cranking devices, clutches, in fact, almost every other element in an automobile's make-up to a high state of perfection, and have not been able to develop a perfect carburetor?

There is a world of wisdom in our message —"Let the Carburetor Alone; it's all right as it is. Look to your fuel, for there lies the source of so-called "Carburetor Trouble."

Almost any carburetor will vaporize gasolene properly and efficiently—and will go on doing so until some foreign substances such as particles of paraffine, dirt, grit and water—always present in commercial gasolene—interfere to clog or choke the carburetor. The ELLIS GASOLENE PURIFIER is a final remedy for carburetor trouble. It taps on the fuel pipe between the carburetor and the gas tank, the nearer the carburetor the better, and by a series of screens and filters takes out of the fuel every bit of foreign substance that finds its way into commercial gasolene and lets nothing get to the carburetor besides purified and filtered gasolene. The Ellis takes advantage of the greater specific gravity of water to eliminate that omnipresent and troublesome element from the fuel. In fact, fuel passing through an ELLIS GASOLENE PURIFIER goes to the carburetor in such a state that even a makeshift carburetor will give good results.



Every particle of sediment, however fine, is removed, leaving nothing but pure gasolene to feed on to the carburetor.

Every dealer should know the advantages of equipping cars with the ELLIS GASOLENE PURIFIER. It provides the true way of stopping carburetor trouble because it goes right to the source of such trouble and insures against it. The insurance against carburetor trouble is a benefit worth many times the cost of the Ellis and a benefit you should urge upon your customers. Send for an Ellis to try on your demonstrator. It is made of brass or aluminum and is very light. Requires no attention outside of draining at regular intervals. When ordering give diameter of fuel lead pipe so unions of proper size may be provided.

Booklet upon request.

The National Sales Company, **45 MILK STREET BOSTON, MASS.**

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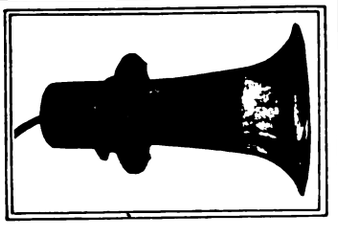
IN THE SALE OF ACCESSORIES YOU WILL FIND IN THE "SPARTON" LINE THE CORRECT ANSWER TO EVERY WARNING SIGNAL REQUIREMENT

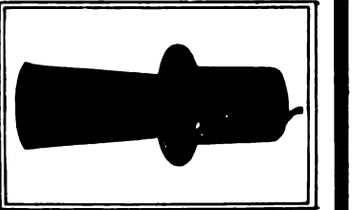
FOUR MODELS. ALL MOTOR DRIVEN BY BIG MOTORS

A dash or underhood style for both big and little cars.

Finished in standard gun metal or with gun metal and brass or nickel bell.

Each "SPARTON" carries the unconditional guarantee of the Sparks-Withington Company. We publish no price list on parts. Every "SPARTON" dealer is instructed to MAKE GOOD and return damaged parts to us collect.

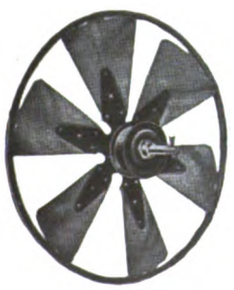




Our selling arrangement protects you in every way. We do not insist on exclusive representation and guarantee you delivery on all the "SPARTONS" you want—when you want them. One price to all DEALERS, no sliding scale—no favorites.

MODEL D "SPARTON" Dash Type - $15.00
MODEL U "SPARTON" Underhood Type 14.00
MODEL J "SPARTON" Underhood Type 10.00
MODEL B "SPARTON" Dash Type - 10.00

The new "SPARTON" catalogue is ready for mailing



WE SPECIALIZE ON THE PRODUCTION OF BETTER FANS
Sparks-Withington famous One Piece Blade Radiator Fans are selected by the better Car Manufacturers as standard equipment.
More Sparks-Withington Automobile Fans are in use than all other makes combined.
The cooling efficiency of each fan is exactly determined in our laboratory. This information is tabulated and gladly furnished to those interested. Our new catalogue treats on Motor Cooling in an intelligent manner and will be mailed on request.



SPARKS-WITHINGTON CO.
JACKSON, MICH.

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SPRINGFIELD CONVERTIBLE BODIES

With a Springfield Convertible Body, a few minutes work will turn the open touring car into a handsome luxurious closed car.

This radical departure from the unsightly, uncomfortable, ordinary top, is the final result of three years' development and it is today the ***only*** practical all-year-round body on the market.

When open, there are no signs calling attention to the fact that the body can be entirely enclosed in glass—just an ordinary closed top is visible.

When in position, the Springfield Convertible Body gives a beautiful glass enclosed, weather proof car with wide doors free from obstructions—in every way equal to the permanently closed car in appearance and comfort.

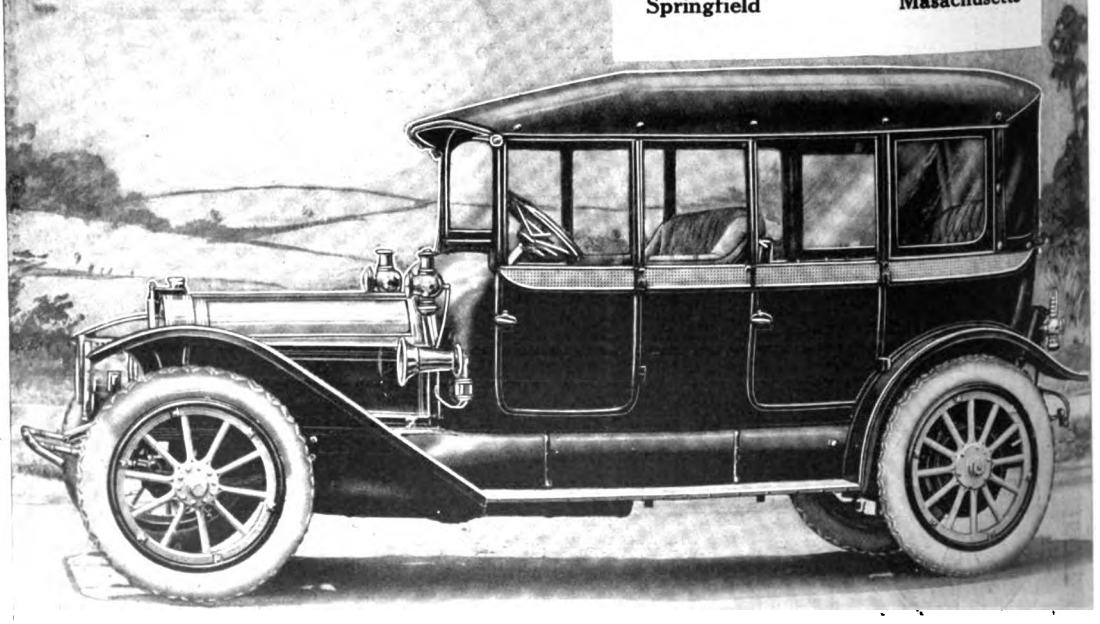
The transformation can be worked in remarkably short time through the simple operation of raising the top and adjusting the glass windows which are contained in a box back of the front seat when the car is open.

The Convertible Top feature is exclusive on Springfield Metal Bodies. It will not fit any other body, but we are prepared to make prompt deliveries on all designs from the little runabout to the largest limousine or landaulet.

Further information is at your command. Write for it.

Springfield Metal Body Co.

Springfield **Masachusetts**



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The Ten "Specialists" in Motor Car Lifting

This line of jacks represents a complete study and mastery of every lifting requirement that can be encountered with every make and model of pleasure car or power truck.



The development of this line as it now stands makes stronger than ever the long-recognized exclusive standard of

GENUINE DUFF-BUILT

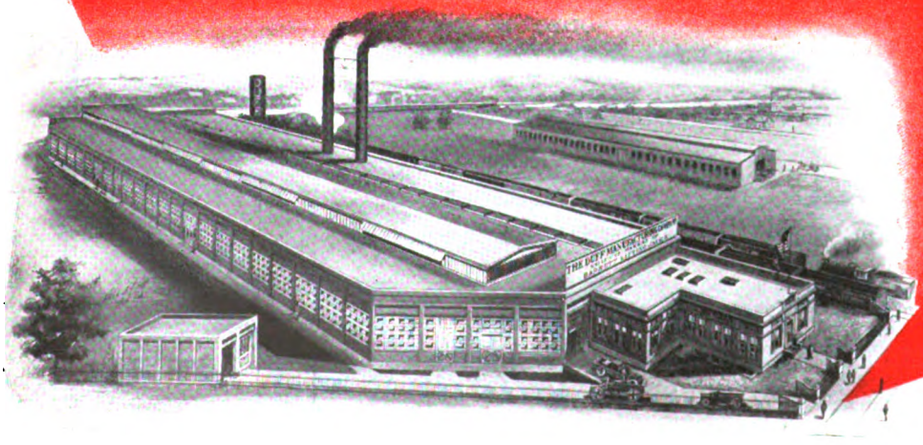
BARRETT AUTOMOBILE JACKS

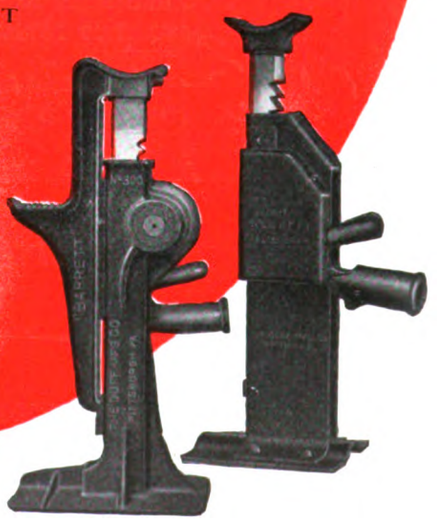
The manufacturer in selecting his jack equipment and the dealer in selling jacks at retail, can do the motorist no better service than to see that he gets the special Barrett best suited to his car. The expense can be but *slightly* greater—the added safety, efficiency and durability being out of all proportion thereto.

A noteworthy feature of this Company's activities has always been the high standard of its manufacturing organization, plant and equipment. Its present plant, new this year, is not only the largest jack manufactory in the world, but is one that cannot be excelled for ideal equipment and working conditions in any industry.

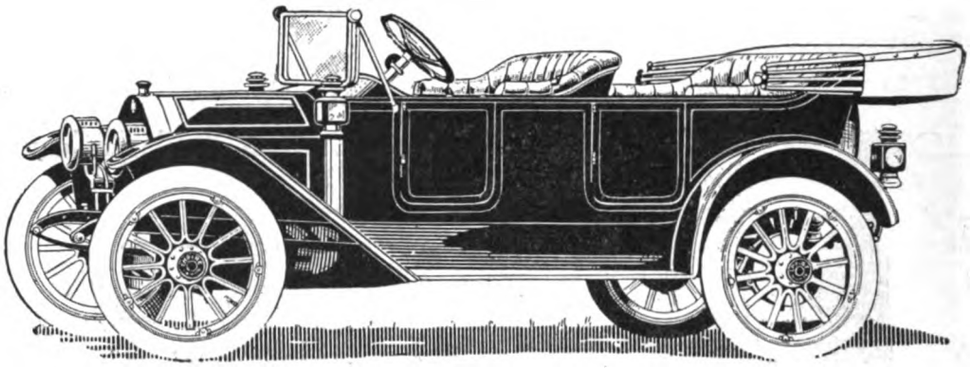
Prompt service on all estimates, orders and correspondence from manufacturers or dealers.

THE DUFF MANUFACTURING COMPANY, PITTSBURGH, PA.
Established 1883
NEW YORK OFFICE: 50 CHURCH STREET





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EMPIRE

"The Little Aristocrat"

The Empire "31" had proved itself a masterpiece of engineering skill and the most solidly constructed car of moderate price.

Its marvelous run in the Indiana-Pacific Tour from Indianapolis to the finish at Los Angeles in perfect condition is a record never before achieved by a car of its size and power.

Empire dealers and owners all over the country are enthusiastic over the service given by this car and are coming back for more Empires.

When we launched this model we went out for the progressive dealers who knew cars and the public's demand. In two months we were swamped with orders which left hundreds of dealers without Empire contracts.

We immediately began to plan for increased 1914 production. Now, after months of preparation, we are turning out four times as many cars, and we are consequently in a position to allot territory which we could not supply last season.

In every important territory where we have distributors we have had, in the last few months, solicitous notes from other dealers who realized too late the popular success of the Empire.

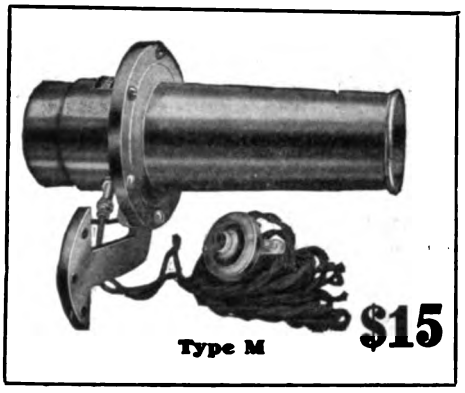
There is still some open territory but it won't last long. Tomorrow may be too late to secure territory now open.

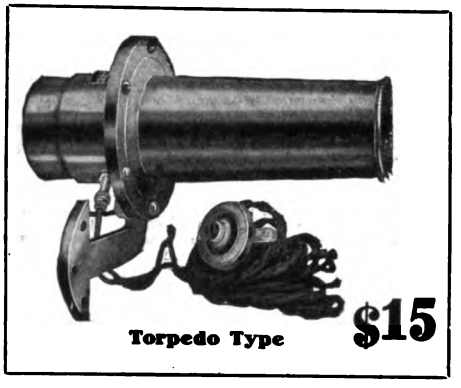
Write for advance folder for 1914

EMPIRE AUTOMOBILE COMPANY

448 Capitol Avenue, Indianapolis, Ind., U. S. A.

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Type M $15


Torpedo Type $15

Prices Reduced On Newtone Horns

Quantity production and most advanced manufacturing methods enables us to lower cost 25%.

TO TAKE EFFECT OCTOBER 1st, 1913 { **Type M, $15** **"Torpedo," $15** **Type N, $15**

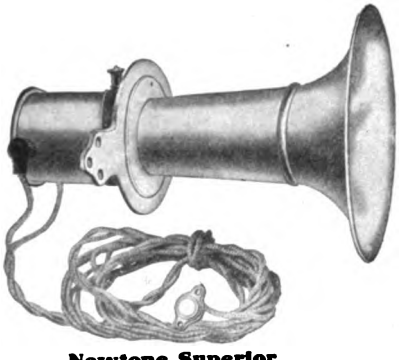
During the last three years the demand and production of Newtone Horns has increased nearly 800 per cent.

Average Weekly Production

In 1911 we produced an average of 350 Newtones per week. In 1912, 900 and in 1913---so far---an average of 2,765 per week.

To meet the tremendous demand for these horns we have added new floors, new machinery and a greatly increased force of skilled mechanics, so that we have doubled our present capacity, thereby insuring absolute satisfaction and prompt delivery on future orders.

We invite criticism and challenge competition.


Newtone Superior

NEWTONE Superior

$10 As Heretofore

The Most "Talked Of" Motor Driven Horn

The Newest Newtone is in every essential the Greatest Newtone we have ever produced.

Write for Our Catalog Today

Automobile Supply Manufacturing Company
220 Taaffe Place **BROOKLYN, N. Y.**

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The Haynes Automobile Company not only makes a good car but keeps in close touch with its dealers—

Helps them sell cars with the greatest possible profit

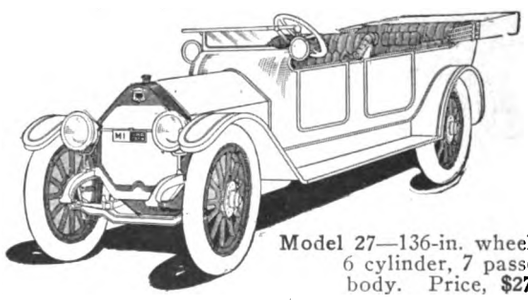
To this end, Elwood Haynes, the President of our Company (creator of America's First Car), and Robert Crawford, our Advertising and Publicity Manager, have been touring from Indiana to the Coast, visiting the dealers in every town and learning first-hand their problems.

The reason why many dealers aren't making enough money has been discovered. This discovery may mean a great deal to you. The reason is that there are

Too many mediocre cars on the market

—too many cars that are "*pretty good*" cars, so far as their mechanical construction is concerned. It is hard to find glaring flaws to pick in them—the trouble is that they are just mediocre in name, reputation and in a selling way. They aren't sufficiently popular cars. They aren't the cars people are interested in. They have no strong individuality, no powerful prestige, no strong advertising back of them to help out the dealer.

Such cars are sold only by the dint of hardest kind of selling effort on the part of the dealer. The dealer has to dig up all his own prospects, keep on their trail day in and day out, and put over the sales by sheer force of his own personality and hard work.



Model 27—136-in. wheelbase, 6 cylinder, 7 passenger body. Price, **$2785**

How many more cars a dealer can sell—how very much larger his profit must be—if he has a strong car of reputation to handle.

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The

HAYNES

America's First Car

Help sell themselves

They are distinctive and desirable in every way. Their prestige as America's first car is a strong selling help—their reputation, built uninterruptedly through twenty years of automobile history, makes them well known. In handling the Haynes, you have the assistance of an alert selling and advertising organization and thousands of dollars spent in publicity—you have in the car itself noteworthy beauty of design, power, durability, coupled with absolutely everything in the way of comforts and conveniences, even down to the little details that often make such a difference—and lastly you have

The greatest feature of this season and of all seasons—

The Vulcan Electric Gear Shift

to help you sell the Haynes. This wonderful feature is sending prospective buyers of automobiles to our dealers by the thousands—and is sending them half sold. Think what a saving this is in time and the expense of salesmanship. How different from having to search out prospects for a car in which people are utterly uninterested, and getting their orders only after long drawn out and arduous efforts.

The Haynes Automobile Company, 1 Main St., Kokomo, Ind.

An outline of the features which make the Haynes sell easily:

Motor—Bore 4¼ in., Stroke 5½ in. L-head Haynes. Cylinders cast in pairs. Model 26, A. L. A. M., 43.35 H. P., Dynamometer 65 H. P. Model 27, A. L. A. M., 43.35 H. P., Dynamometer 65 H. P. Model 28, A. L. A. M., 29.9 H. P., Dynamometer 48 H. P.
Weight—Model 26, 3800 lbs.; Model 27, 4000 lbs.; Model 28, 3400 lbs.
Cooling—Centrifugal pump and pressed steel fan.
Wheel Base—Model 26, 130. Model 27, 136. Model 28, 118.
Ignition—American Simms Magneto.
Carburetor—Stromberg.
Lubrication—Splash and gravity feed.
Control—Left hand. Vulcan Electric Gear Shift.
Transmission—Selective Type, three speeds forward, one reverse.
Steering Column—Worm and worm gear type.
Clutch—Haynes contracting steel band.
Rear Axle—Full Floating Timken on Models 26 and 27; McCue, Model 28, Gurney Bearings.
Front Axle—I-Beam. O. H. steel heat treated.
Wheels—Artillery type. Funk demountable rims.
Tires—Models 26 and 27, 36 x 4½. Model 28, 34 x 4.
Springs—Front Semi-elliptic 39⅛ x 2, rear 48 x 2.
Brakes—15¼ external and 15 internal Models 26 and 27. 12 and 16 internal on Model 28.
Finish—Indiana dark blue body. Pacific Tour gray, optional.
Gasoline Feed—Pressure. Automatic feed.
Upholstery—Buffed leather—deep cushions.
Starting and Lighting—Leece-Neville electrical system.
Cowl-board Equipment—Electric lights, sight oil feed, automatic cut-out for generator, dash light, auxiliary air pressure pump, air gauge, speedometer. Models 26-27 have rim wind clock.
Other Standard Equipment—Top, top cover of silk mohair, mechanical tire pump, rain vision ventilating wind-shield, Vulcan electric gear shift, two large electric headlights, electric side lights, electric tail light, electric starter, generator, 12 volt, 80 ampere hour storage battery, speedometer, horn, coat and foot rails, tire irons, full tool equipment, one extra demountable rim and Collins curtains. Models 26 and 27 have shock absorbers.

Hand lever shift optional, all models, at $200 reduction.

Let us send you full particulars about the latest Haynes models and their noteworthy new features

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Lippard-Stewart Model "F"

Chassis Price $2300, f. o. b. Buffalo

Backed by Reputation

A worthy running mate of the widely successful Lippard-Stewart 1500 pound delivery car is this new truck of popular type. Just as far advanced in its field as the car which has established the name of Lippard-Stewart as the embodiment of all that's high quality in commercial cars. The first truck of its capacity to be strictly up-to-date in its construction, and at a price that stamps it the foremost truck value of today. The Lippard-Stewart line, with this new 1½-2 Ton Worm Drive Truck added, will meet the requirements of the great proportion of truck users. For the dealer, the line offers opportunities for sales unequalled in the trade.

The New Truck's Features

35 H. P. Continental motor; Eisemann Magneto; built-up tubular radiator; cone clutch; Brown-Lipe transmission; worm and gear steering device—left drive, right hand control; straight line shaft drive; Spicer Universal Joints; Timken axles, worm drive rear; two sets big brakes on rear wheels; semi-elliptic springs; wheelbase 145 in. or 158 in.; tires solid, 36 x 3½ in. front, 36 x 3 in. dual rear.

After you read about this truck, think how many qualities it possesses that you know are heavy scorers—how many points have a direct appeal to the well posted purchaser of today! The advanced design of the Lippard-Stewart means that it is a leader—far ahead of any truck that claims to be in the same class. Dealers, hitch your wagon to a live wire!

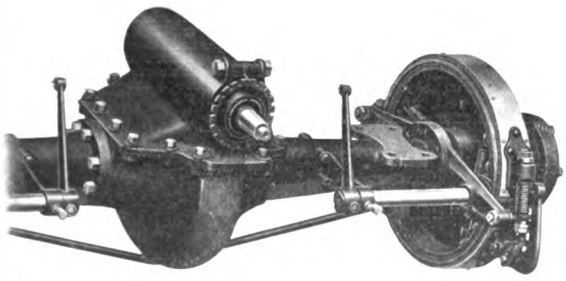
Worm Drive

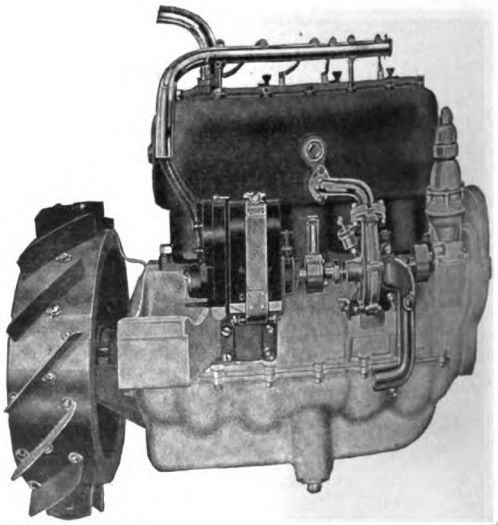
Worm drive is one feature which in itself stamps the Lippard-Stewart as thoroughly modern. For trucks of Model F's capacity, other types of final drive are back numbers. English engineers have for a long time used the worm and gear on big London omnibuses with marked success. We ourselves have tested it for many months in connection with the shipping department of a big factory. The first Lippard-Stewart 1½-2 ton truck was tried out in Pennsylvania mountains and the heavy clay and sand roads of Ohio. Such grueling work—days of it without a halt—established under every condition the make-good qualities of worm drive.

The Lippard-Stewart rear axle is built through the combined efforts of the Timken-Detroit Axle Company and David Brown Sons Company, the latter firm widely known English experts on worm gearing. It permits more power to be delivered to the rear wheels than through any other drive system. It reduces friction loss. It does not lose its efficiency after wear commences. It retains its original working condition no matter how long it is in service. It is quiet in operation and applies power smoothly.

Wealth of Power

Then again—Lippard-Stewart Model F has a wealth of power—more than just enough for ordinary requirements. The big Continental motor develops 35 H. P. at normal speed, which, acting through a 7¾ to 1 gear ratio, gives that assurance of ability to meet any emergency which so few trucks nowadays possess. But a driver cannot force the car—an automatic governor keeps down the speed to 15 miles an hour. The motor is built as nearly fool-proof as possible.





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1½-2 Ton Capacity; Worm Drive

Bodies for Various Purposes

Once more—there are no bugaboos about overheating of Model F. Lippard-Stewart engineers know the distinction between touring car practice in design and truck practice. As the service is harder, so must greater cooling facilities be provided in a truck; so must ease of repair and protection from damage be dominating features. By mounting at the dash on coil springs a vertical tubular radiator of the built-up type, having large cast aluminum tanks, the Lippard-Stewart meets the necessary requirements to the last detail. Liberal water capacity and cooling area make overheating practically impossible.

Reserve Strength

What do we mean by reserve strength? We mean that Model F's construction will stand up under the unexpected. In the worst pinches it will pull through. The mechanism won't go wrong when the truck's work is hardest. This is the reason why we make the clutch and transmission of even greater capacity than the motor rating—why we make the frame 4¼ in. wide and 6 1-16 in. deep, where the greatest strain comes, in order to make sagging an impossibility—why we make spring carriers and pivot bolts extra large—why we use a steering gear of a size which makes safety an absolute surety.

Straight line shaft drive supported at its center by a self-adjusting ball bearing, a load distribution that provides easy steering and sufficient traction, accessibility and simplicity—here we find the completion of a truck that is unquestionably suited to its work like no other. And back of it is the truck wisdom and the quality stamp of Lippard-Stewart.

Now, Mr. Dealer

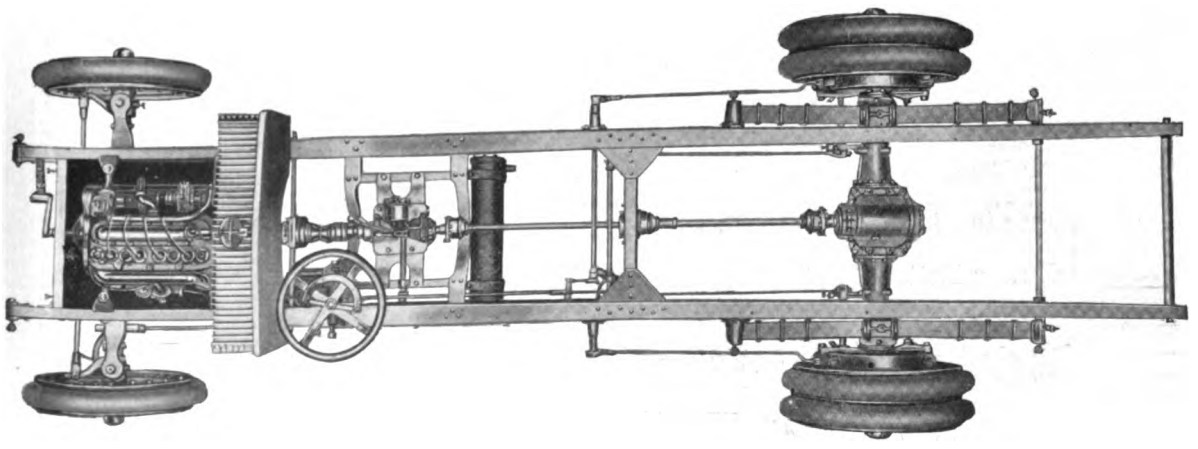
you see what great value this truck offers. You know how extensive is the demand for such a thoroughly good truck, and how it will grow. You know what other makers are offering. Your judgment of trucks will tell you how Lippard-Stewart Model F at $2300.00 excels in a way that forestalls competition in its class. If you are one of the wise dealers who have the ability to spot a good thing, you want our proposition. Write for it and ask for literature on the complete Lippard-Stewart line. It is a winner in a winning business. Get all the facts before you now.

Lippard-Stewart Motor Car Co.

1738 Elmwood Ave., Buffalo, N. Y.

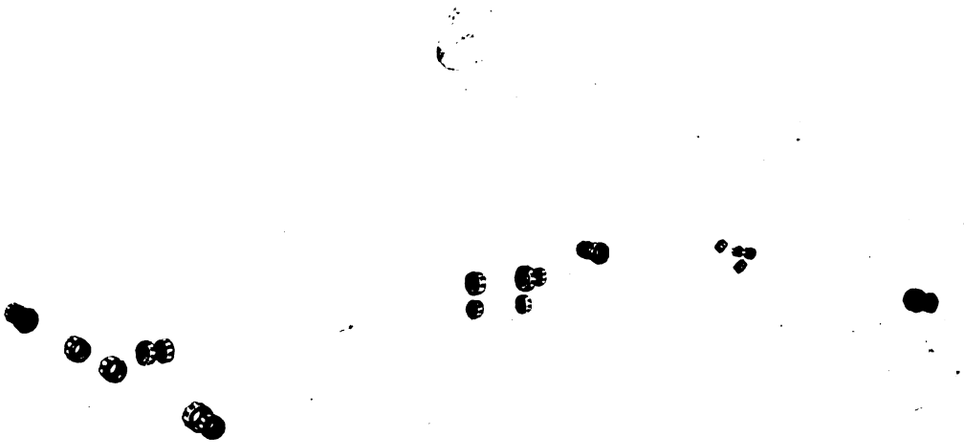
August Becker, Pres. and Treas.
J. C. Millar, Secretary

E. J. Barcalo, Vice-President
C. S. Dahlquist, Chief Engineer



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"BOWER SAVES POWER"



Gnarding the Ronte of Power

You know the horsepower of a certain automobile—but do you know how much of that power is transmitted into MOTIVE power or traction power? On its way from the engine the power of an automobile is assailed at SEVENTEEN bearing points by its greatest enemy—Friction.

There are seventeen such places in a car where more or less power is lost—seventeen places where power may be "spilled" in transmission.

It is the business of Bower Roller Bearings to guard the route of power at these danger points. Compare the efficiency of a single Bower bearing with that of any other bearing; multiply that difference by seventeen—and you will see how vital is the value of Bower Roller Bearings to the effective power of an automobile.

Friction is the thief of Power.

Bower Roller Bearings are Power's Guardian.

Bower Roller Bearing Co.
DETROIT, MICH.

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"American" Axles

Bring Out the Full Effectiveness of the Lanchester-Daimler Worm Drive



Not until the Lanchester-Daimler Worm Drive was placed in a full floating "American" Axle, did it become part of a unit that is flawless in every factor.

Acknowledged the most efficient Worm Drive ever created, we have given it a mounting correspondingly perfect in design, material and workmanship; bringing to this important problem precisely the same high quality of engineering skill that won first place for our Bevel Gear Axle.

We have, therefore, increased for users in America the prestige of that Worm Drive which has for years ranked highest abroad, and whose adoption for both gasoline and electric pleasure cars marks the most notable recent advance in motor car building.

The adjusting and full floating features of "American" Axles are fully covered by our own patents and by shop rights from other patentees.

THE AMERICAN BALL-BEARING COMPANY, Cleveland, Ohio

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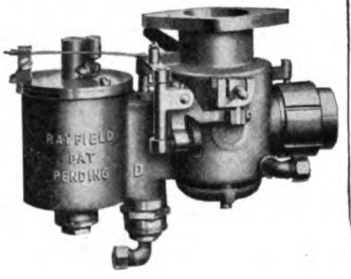


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RAYFIELD CARBURETORS

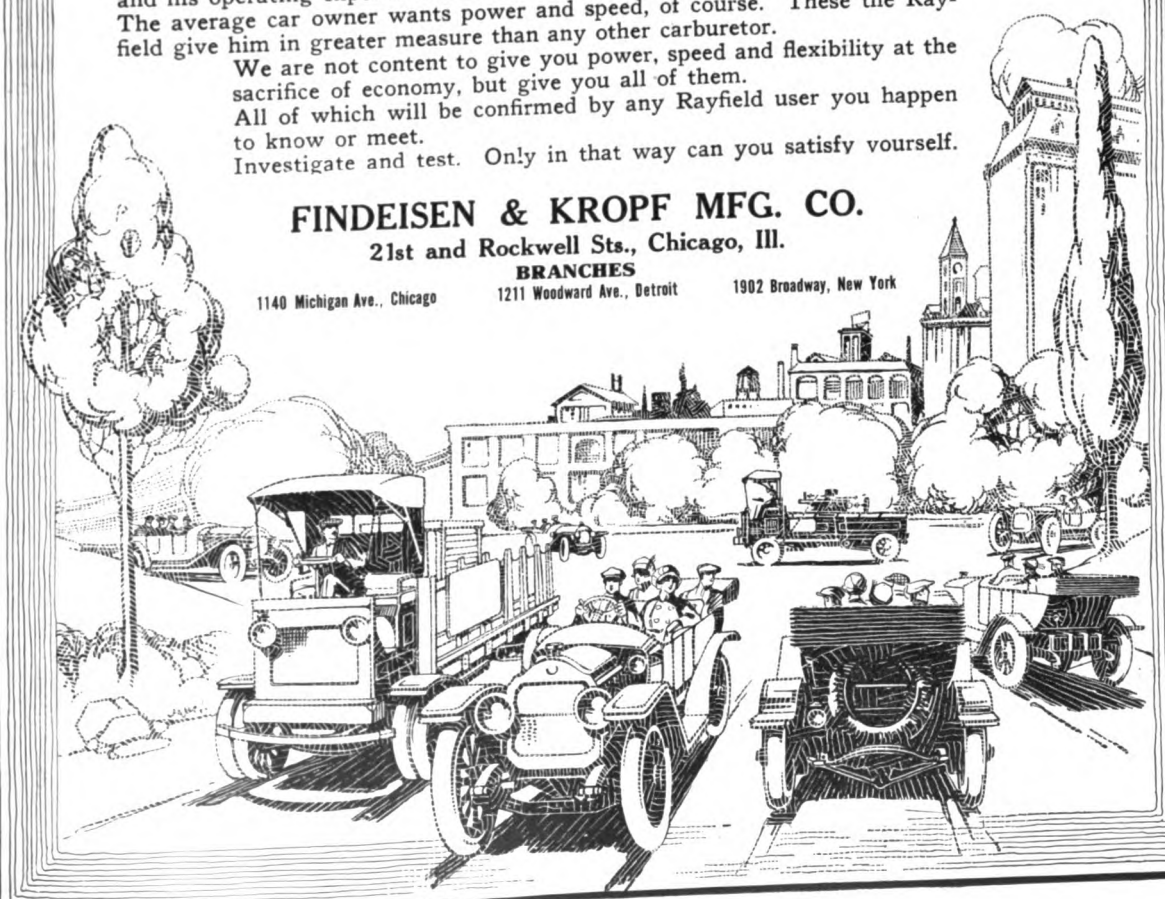
are Most Economical

in All Kinds of Weather
With All Makes of Cars
Using All Grades of Gasoline



Every Rayfield user knows that economy is one of the cardinal features of Rayfield carburetion, whether touring, hill climbing, racing or driving on the boulevard.
This carburetor, in the most recent economy tests for heavy, high-powered six-cylinder cars, established the world's record.
Many an owner of a car that was eating up gasoline and returning six, seven or at most eight miles per gallon, has installed a Rayfield and found his mileage increased and his operating expense reduced.
The average car owner wants power and speed, of course. These the Rayfield give him in greater measure than any other carburetor.
We are not content to give you power, speed and flexibility at the sacrifice of economy, but give you all of them.
All of which will be confirmed by any Rayfield user you happen to know or meet.
Investigate and test. Only in that way can you satisfy yourself.

FINDEISEN & KROPF MFG. CO.
21st and Rockwell Sts., Chicago, Ill.
BRANCHES
1140 Michigan Ave., Chicago 1211 Woodward Ave., Detroit 1902 Broadway, New York



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How the ten-thousand car producer can INCREASE his costs by $20,000 to $30,000.

The SPRING LOCK WASHER, as a detail of automobile construction, will remain a general standard only so long as it provides automobile users with such security of bolted-up parts that the continuous maintenance of same may be disregarded.

And if the LOCK WASHER fails to provide such security, the manufacturers of automobiles will be compelled by public demand to return to the castellated nut and cotter with an increased cost in manufacture OF OVER ONE CENT PER BOLT.

The average number of SPRING LOCK WASHERS in use per car is between 200 and 300—and the expense of procuring the device adapted to proper efficiency is but a trifle as compared with the expense of returning to a construction which will increase cost from $2 to $3 per car.

There are three points to a nut lock—proper size, proper analysis, proper treatment. Are you sure of all three on your car?

THE NATIONAL LOCK WASHER COMPANY

CHICAGO, ILL.——————NEWARK, N. J.

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Monarch

ANNOUNCEMENT

Full five-passenger touring car, long stroke motor, 25 horse power, 110 inch wheel base, gasoline in dash, selective sliding gears, bell backed body, quick detachable rims, 32 x 3½ inch tires, complete equipment, wire wheels, electric self-starter and lights.

$1050

F. O. B. DETROIT

With All the Qualities of a Leader

The new Monarch will be ready for delivery in September. Look at the car and note the specifications. Was there ever an automobile more appropriately named? Big, beautiful—it has no contenders to the place of leadership in its field. It possesses the attributes of distinction. Feature upon feature, found only in the higher priced cars, will surprise and delight the man who is looking for a car around $1000.

Nothing in the low price field approaches the beauty of Monarch design. The stream line body with its original method of using the Renault hood gives it lines of grace and beauty unexcelled by the elite of motordom.

FULL FIVE PASSENGER BODY

Exceptional roominess both in the fore seat and in the tonneau, deep upholstery and full elliptic springs provide the utmost comfort under all conditions. It's a full five-passenger car with so much leg room in the tonneau that a foot rail is necessary.

ECONOMICAL OF FUEL

The motor is designed to give plenty of power for rough road or steep hill travel, yet to keep the gasoline consumption down to the minimum. A small bore, long stroke motor of the twin cylinder type assures great power and absolute reliability.

CONVENIENT DRIVING

No feature for convenient driving is omitted. A foot throttle and foot brake are on the toe board. There are also a hand brake within easy reach, a hand lever throttle and spark control both on the steering wheel. An efficient electric system operated from the seat starts the motor and supplies electricity for five lights.

DEALERS—HAVE YOU ITS EQUAL?

Can you offer the buying public so much real automobile value as shown by the Monarch? No—This sets a new standard of value—a value that will arouse the enthusiasm of every person who sees the car.

WRITE FOR ILLUSTRATED ADVANCE CIRCULAR

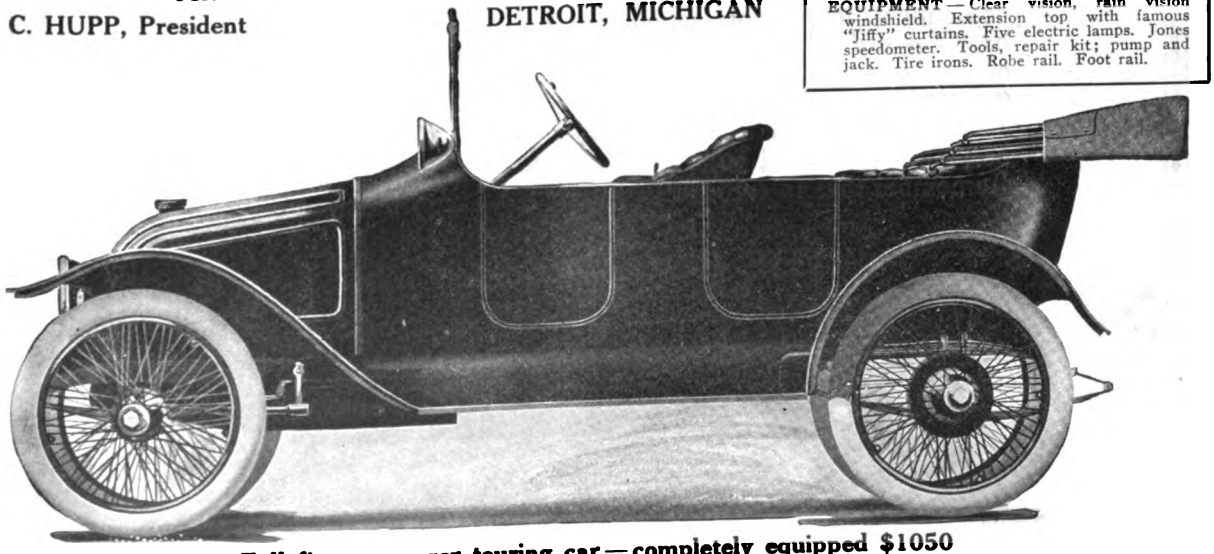
MONARCH MOTOR CAR COMPANY

Jefferson and Baldwin Avenues

R. C. HUPP, President DETROIT, MICHIGAN

Read These Specifications

PRICE—$1,050.00—f. o. b. Detroit.
MOTOR—25 H. P., cylinders—4. (3 3-16 inches x 5 inches) cylinders cast in pairs—water cooled—Thermo syphon—4 cycle—3 bearing crank shaft.
RADIATOR—Under hood and forward.
CARBURETOR—Float Feed.
IGNITION—Magneto.
STARTING—Electric.
LIGHTING—Electric.
LUBRICATION—Force feed (to time gears and front and rear main bearings).
CLUTCH—Cone, leather faced.
TRANSMISSION—Selective sliding, separate unit.
SUSPENSION—3 point, motor and transmission mounted on tubes.
SPEEDS—Three forward and one reverse.
DRIVE—Shaft, not enclosed. Double universal joint type.
REAR AXLE—Extra strong, semi-floating (bevel drive).
BRAKES—Two sets on rear hubs, external contracting and internal expanding 12 x 2 inches, extra large surface.
TIRES—32 x 3½.
RIMS—Quick Detachable.
STEERING—Left hand, irreversible, 18 inch steering wheel.
CONTROL—Center lever, operating on transmission direct.
BODY—Torpedo type, stream line, full five passenger with fore doors.
SIGNAL—Electric horn.
WHEEL BASE—110 inches.
SPRINGS—Rear full elliptic, swivelled on bottom and hung under axle. Front semi-elliptic.
WHEELS—Wire wheels.
FRAME—Pressed steel.
GASOLINE—Under cowl on dash, capacity 10 gallons.
EQUIPMENT—Clear vision, rain vision windshield. Extension top with famous "Jiffy" curtains. Five electric lamps. Jones speedometer. Tools, repair kit; pump and jack. Tire irons. Robe rail. Foot rail.



Full five passenger touring car—completely equipped $1050

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What about your car when it's three or four years old?

What about it when it is stuck in the mud and the engine has real work to do?

You know well enough that any good modern motor will pull a brand new car over a boulevard "just as nice as pie". But when your motor has thirty, forty or a hundred thousand miles to its credit, or when it goes against real work—that's the time you'll be glad if you insisted on having a car with a

BUDA MOTOR

"the part that sells the car"

The difference between a motor and a ***BUDA*** Motor does not all appear to the casual glance, because the car or truck motor of today is a standard article in its general features.

But when you have a BUDA Motor, which is good enough to cause many car manufacturers to give up their motor departments in its favor—when your BUDA Motor is old enough to have a *record—then you know* what it means to sit behind the product of our great organization of *Motor Specialists*, who make motors of superlative excellence because they concentrate their whole activity on motors, and motors only. The result is the admitted "world's best motor". You'd rather have that than just "our regular motor". Remember that an automobile is only a motor with trimmings.

THE BUDA COMPANY

FACTORY, HARVEY, ILL. (Chicago Suburb).

Address all correspondence to our **FACTORY REPRESENTATIVES**

BRANDENBURG & COMPANY

1108 S. MICHIGAN AVE., CHICAGO 57TH & BROADWAY, NEW YORK FORD BUILDING, DETROIT

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Manufacturers and Dealers:

Is there anything more foolish than to ask a car owner to pump up a tire by hand when there is a 20 to 90 H. P. engine by his side? Hand pumps must go—even before gas lighting, hand gear shifts, etc., and the makers of the better cars—Packard, Peerless, Stevens-Duryea, Winton, Palmer-Singer, Stoddard-Dayton, Chalmers, and many others—have used for years just one tire pump—the

Four-Cylinder KELLOGG Air Pump

This is the standard power air pump. No other can boast our record. We would like to submit what the makers of above named cars say of our product.

We are prepared to furnish attachments for equipping the following cars with the Kellogg Four-Cylinder Power Tire Pump:

Abbott-Detroit 1912-'13, 44-50.
American 1912-'13.
Apperson 1912.
Bergdoll "30"
Buick 1914 models in preparation
Cadillac 1911-'12-'13-'14
Chalmers "30" (36 and 6 cyl. attachment from Chalmers factory)
Cole 1912-'13, "40," "50," "60"
F. I. A. T. "54," "55," "56"
Flanders "6"
Haynes 1913, "23," "24"
Hudson "33," "37," "54," and 1914
Imperial 1914
Jackson 1913
Kissell 1913, 4 cyl. and 6 cyl.
Locomobile, I, L, M, R
Lozier 1911-'12-'13-'14 — all models
Marmon 1912
Oakland 1913—all models
Packard "30 No. 1248," "1338," "1348," "238."
Paige-Detroit 1913
Pierce-Arrow (all models 1907 to date)
Selden (all models)
Simplex "38," "50"
Speedwell 1914
Stearns 1913 and 1914, 4 and 6 cyl. Knight
Stevens-Duryea "A A," "X," "Y"
Studebaker "6" 1914
Warren-Detroit 1913
Winton "6" (all models 1910 to date)

Dealers and garage owners can make money by writing us for information. The demand for our product has arrived. Be prepared to fill it.

Write for Particulars

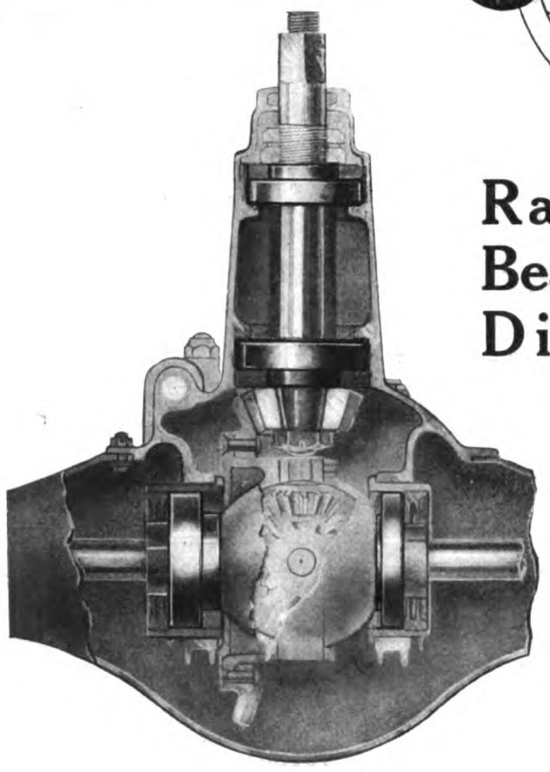
KELLOGG MANUFACTURING CO. Main and Circle Sts. ROCHESTER, N.Y.

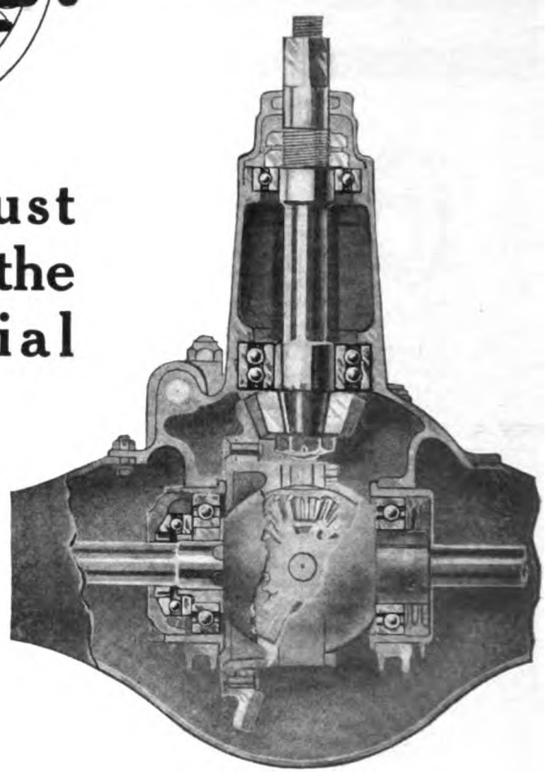
NEW YORK 1733 Broadway
SAN FRANCISCO 444 Market Street
CHICAGO 1112 So. Michigan Avenue

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CAPACITY
GURNEY
ENDURANCE

Radio-Thrust Bearings in the Differential





¶ We show above several Radio-Thrust substitutions as applied about the differential.

¶ An R-T Bearing (wide type) in place of a radial and a thrust bearing back of the large bevel gear, and a narrow type R-T opposed thereto in the place of an ordinary annular on the other side of the differential.

¶ An R-T Bearing (wide type) in place of a double row annular back of the pinion with another R-T opposed thereto supporting the other end of the pinion shaft.

¶ The simplicity of this construction needs no comment. Each bearing is subject to both radial and thrust loads, and each has the needed capacity thrust as well as radial to safely and easily take care of any stresses that any emergency may impose upon it. The distinctive point in these bearings is that the particular sort of loads that the several bearings are subject to are in each case merely normal loads, just what the bearings are designed to carry. In other words we think it is the logical and rational thing to adapt the bearings to the character of the service. Hence the Radio-Thrust Bearing. It makes Gurney capacity and endurance available in every bearing of the car.

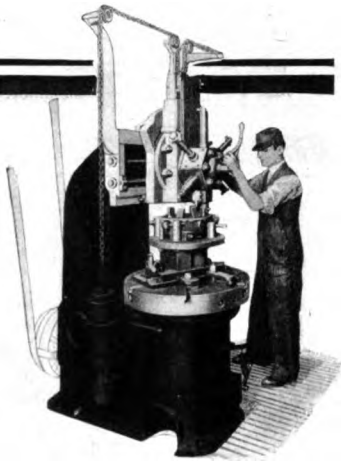
Gurney Ball Bearing Company

Jamestown, N. Y.

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The Teeth that Always Fit

Part III The Story of Four Holes



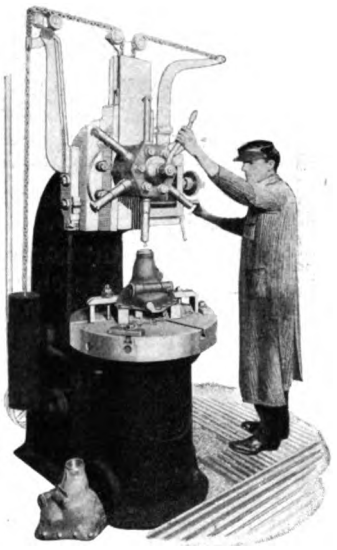
OUT in the factory is a machine on which is mounted the differential-carrier of a rear axle. The carrier stands upright on its smaller end while sharp cutting tools plane off the surface that is to fit against the axle housing.

The same machine also reams out and threads the opening for the sleeve that holds the pinion bearing.

On the accuracy of that machine depends the perfect meshing of gears, quiet running, long wear—satisfaction to the owner of a Timken-Detroit Axle.

It took years of engineering experience, days of careful labor in the toolroom, to design and make the jig that holds the differential-carrier on that machine.

But it's worth while, for only thus can we *know* that those three operations will be done right *every time*. The jig is automatic, it is not subject to human error.



TIMKEN-DETROIT AXLES

Getting the Pinion-Shaft in Line

At the front of the pinion-shaft is another bearing. The opening for it, too, must be exactly determined.

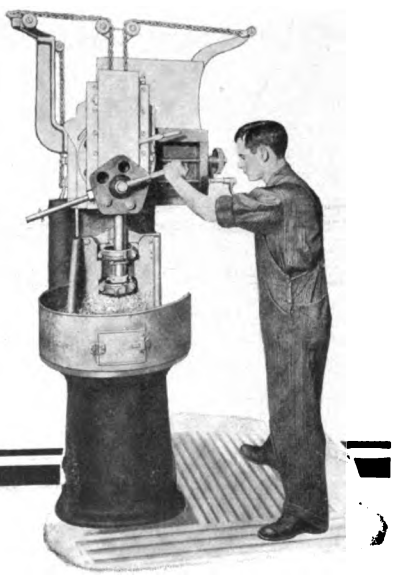
And so the carrier goes to a second jig and is held firm while that second hole is reamed true.

Now we know that when the carrier is bolted to the axle-housing the pinion-shaft will be exactly at right angles to the drive shaft.

Still Another Jig is Needed

The openings for the differential bearings remain. They too, must be right, or the teeth of the gears will never fit.

So jig No. 3 takes its turn, and makes us sure that the drive gear will turn in a plane parallel to the two wheels, and with its center exactly the right distance from the pinion.



Even This Does Not Satisfy Timken Ideals

We have found the way to do the thing right, but that is not enough. We must prove it right beyond any shadow of doubt.

So once more we turn to the humble jig.

But that's another story, and will follow in Part Four, in the next issue of this magazine.

NOTE:—The first two articles in this series on "The Teeth that Always Fit" appeared in the two preceeding issues of this magazine. We shall be glad to send you copies of the articles free on request.

Timken-Detroit Axle Co.

Detroit, Michigan

(23)

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MERCER

A Consistent Winner

A 300 CUBIC INCH MERCER driven by Ralph De Palma, won the 302-Mile Cobe Trophy Race at Elgin, Ill., Aug. 29, at an average speed of 66.8 miles per hour. This is the third consecutive year the Mercer has won the 300-inch division of the Elgin races.

The winning of one race, or even several races, does not necessarily indicate that any particular car possesses superior qualities from a speed and utility viewpoint, consistency, continued participation in racing, and the comparative merit of a car's performance is what proves its claim to championship honors.

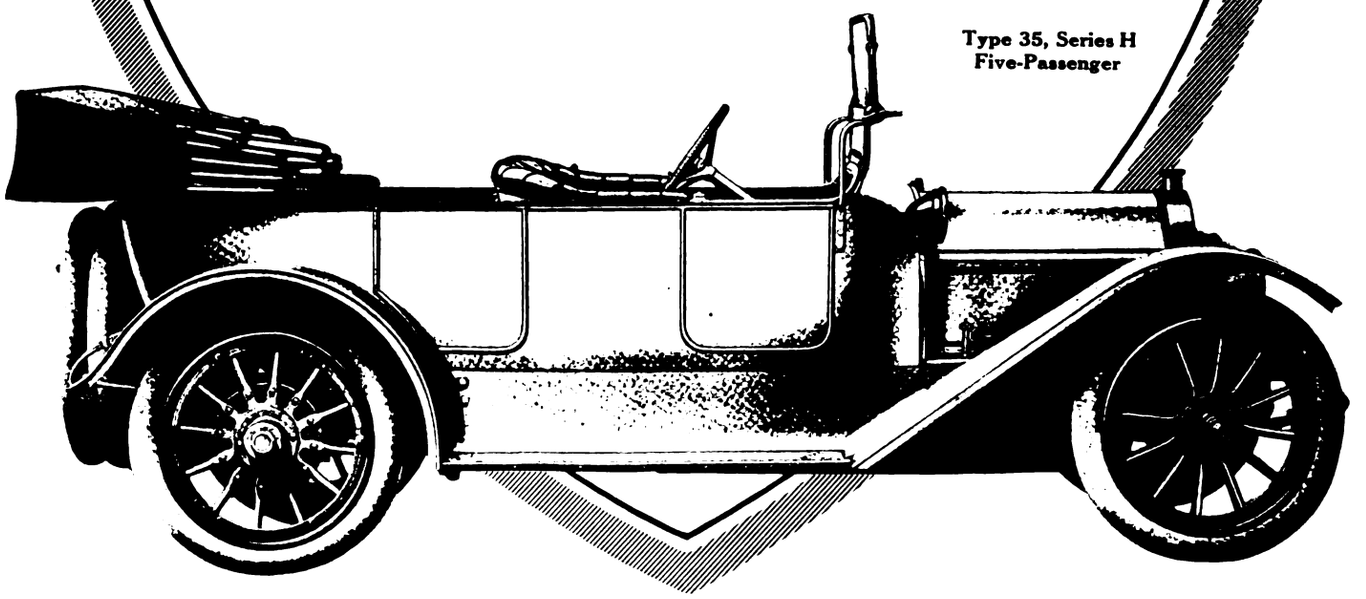
The Mercer record for the past three years speaks volumes.

There is no greater asset for the dealer than the car's actual performance. Think what Mercer victories mean to Mercer dealers

Write Today Regarding Unalotted Territory

MERCER AUTOMOBILE COMPANY

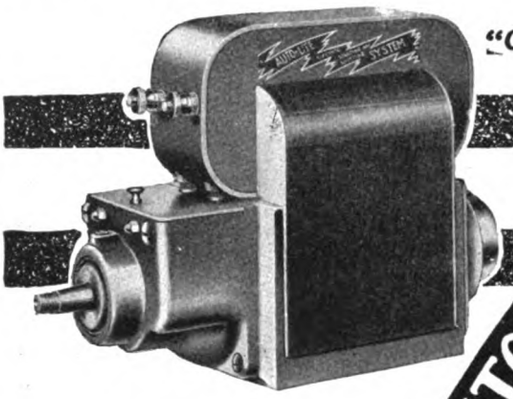
700 Whitehead Road, Trenton, N. J.



Type 35, Series H
Five-Passenger

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"I have sold more than one_____car in competition with others of much higher price, because it was equipped with an Auto-Lite Electric Generator."



"Current to Burn"

AUTO-LITE ELECTRIC STARTING and LIGHTING SYSTEM

The new Model "G" Auto-Lite Generator is built with magneto dimensions—can be placed on the bracket provided on the engine for the magneto and driven directly by the magneto shaft, or it can be connected direct to pump shaft—no additional transmission, such as gears, chains or belts being required.

Reaches its maximum output at a car speed of 17½ miles per hour. Begins to produce current at a speed of about 6 miles per hour.

Water and dustproof—gives you high current production at low car speeds.

THE star salesmen of one of the well known automobile concerns made this statement last week in our office. He went on to say—

"The Auto-Lite Electric Generator has given such satisfactory service on_____cars, that I have actually marveled at its ability to keep running day and night without any more attention than I have given the radiator or tires.

I have driven a demonstrator equipped with an Auto-Lite System all over the country, through rain storms, over the roughest kind of roads, and I have yet to find the first fault with it.

The lights are always bright—ready when I want them.

The control is perfect, which is something you can't say about the others.

The Auto-Lite is unquestionably the best electric lighting system on the market today."

These statements were made by a man with long experience in the motor car business.

He travels continuously, is personally acquainted with all of the well-known automobile agents east of the Mississippi River.

Therefore, he is thoroughly posted and knows whereof he speaks.

"THE PIONEER 6 VOLT ELECTRIC SYSTEM"

GET THIS BOOK

Send for our "Handbook on the Care and Operation of Automobile Electric Systems," a book so full of interesting information on all modern electric systems that no automobile owner can afford to be without it.

Explains in detail, functions of the various parts—how to locate and remedy troubles of all kinds—embraces all electrical automobile systems.

The large operation chart which it contains is alone worth the price.

Regular price 50 cents.

Will be sent to you for 10 cents in stamps if you use this coupon.

THE ELECTRIC AUTO-LITE COMPANY

116 MICHIGAN STREET, TOLEDO, OHIO

Branches: New York Boyer Building, Detroit Kansas City San Francisco

Manufacturers of Modern Electrical Starting, Ignition and Lighting Outfits for Motor Cars

This Coupon Saves You 40c

The Electric Auto-Lite Co.
116 Michigan Street, Toledo, Ohio

Enclosed find 10c in stamps for which please send me your handbook.

Name .....

Address .....

.....

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70 to 140 Miles Every Day

That's the steady record of the one-ton Kelly Trucks running on the Malvern Hill-Richmond Bus Line.

Each truck makes at least four trips a day between the Virginia capital and historic Malvern Hill. The distance is 18 miles and the average is 1 hour and 30 minutes.

Hundreds of Kelly Trucks are equaling or bettering this performance every day under all sorts of conditions.

Would it help your business if your wagons were able to average more than 70 miles a day? A kelly can do it.

DEALERS!

There is still some desirable Kelly territory open. Write for our agency proposition.

THE KELLY-SPRINGFIELD MOTOR TRUCK COMPANY

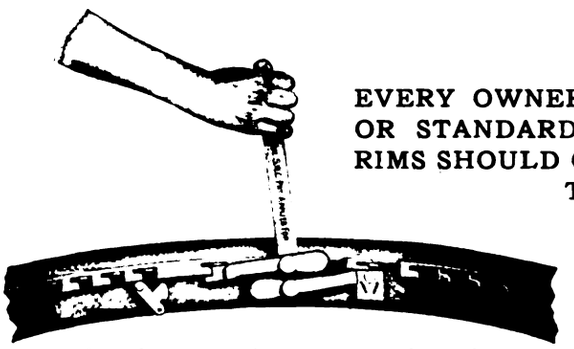
807 Burt Street, Springfield, Ohio

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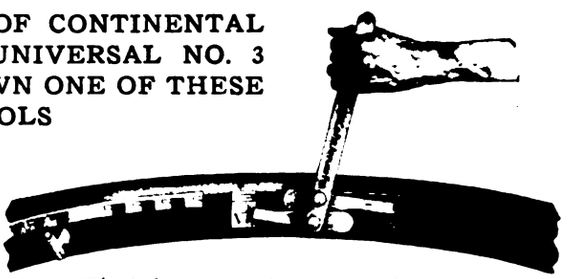
A New Detaching-Tool for Continental and Standard Universal No. 3 Rims

THIS new tool will enable you to change a casing or tube in much less time than you can do it now and with considerable less effort.



Tool in operation — unlocking rim

EVERY OWNER OF CONTINENTAL OR STANDARD UNIVERSAL NO. 3 RIMS SHOULD OWN ONE OF THESE TOOLS



Tool in operation — locking rim

This tool provides a much greater leverage than the old tool.

It is easily applied to the rim.

It is easy to operate.

It is made of drop-forgings and is very strong.

The tool is made in two sizes — one size for 36" x 4½" rims — one size for all other rims.

It costs only one dollar plus delivery charges.

Send us the dollar in any way convenient to you. Enclose with your order postage sufficient to pay for parcel-post delivery. The tool weighs one pound.

We'll ship it by return mail.

The Standard Welding Company

Pioneers and World's Largest Producers of Motor-Driven Vehicle Rims

Main Offices and Factory, CLEVELAND

Branch Offices in

NEW YORK
U. S. Express Building

CHICAGO
Peoples Gas Building

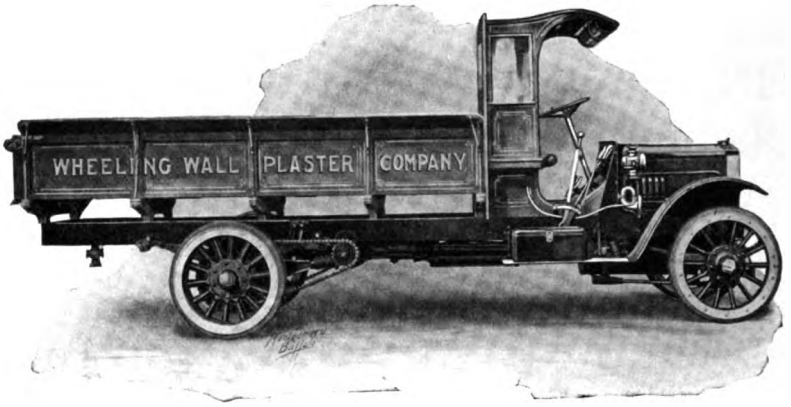
DETROIT
Ford Building

Distributors in Principal Cities of the United States

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THE ATTERBURY LINE



It is a shrewd move on the part of a dealer who makes sure, before he signs up to handle a certain line of trucks, that he can get prompt deliveries on both chassis and bodies.

This feature of the business is watched with jealous care at the Atterbury shops. Shop practice is carried on so as to insure against delays. We do so much of the work of building our trucks, and depend so little upon outside help that we govern our deliveries to the last degree.

We cannot urge too strongly the wisdom of investigating the Atterbury Line, the value of knowing what ten years of actual truck building has taught and the satisfaction of handling a line of trucks which are sold right, on which the maker realizes a fair margin of profit, and on which the dealer builds a paying business.

THE ATTERBURY MOTOR CAR CO., Buffalo, N. Y.



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Confidential to Automobile Manufacturers

Getting right down to "brass tacks" and talking man to man isn't it true that the CLUTCH is the one point of contact between the driver and your car?

That being so, isn't the continued good behavior of the CLUTCH a matter of prime importance? You want the CLUTCH right in the first place and you want it to stay right.

You are naturally anxious that the CLUTCH should say good things to those who drive your cars; what are you doing to make sure of it?

We respectfully suggest that the services of CLUTCH SPECIALISTS would be extremely worth while. KONIGSLOW-CLEVELAND will gladly have you make use of their experience and facilities.

Don't wait till you're ready to place orders—write today.

THE OTTO KONIGSLOW MFG. CO.
Cleveland

THE GREATEST CAR VALUE FOR 1914

See all others—but examine the KING before you buy

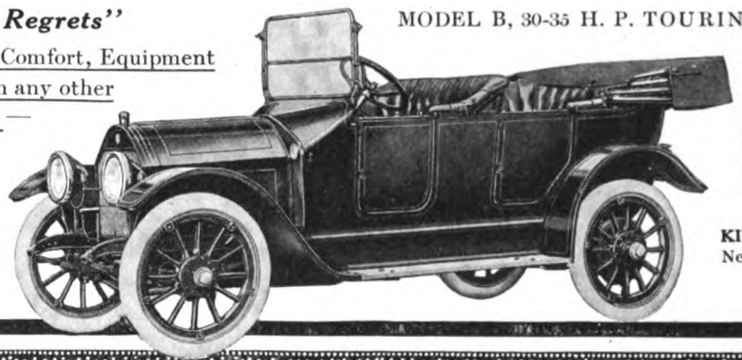
"The Car of No Regrets"

MORE Service, Economy, Comfort, Equipment and Style than can be had in any other car near the KING'S price—

$1095

WITH EQUIPMENT
Ward Leonard Starter and Generator, $100 net additional.

MODEL B, 30-35 H. P. TOURING CAR AND ROADSTER



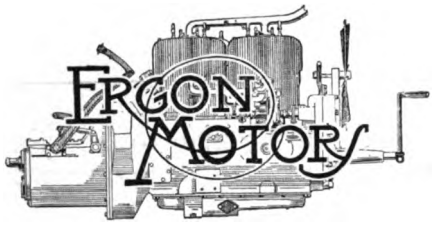
"None So Easy Riding"

The KING'S patent cantilever rear springs make all auxiliary shock-absorbers unnecessary; prevent "side swing" and assure long life to car and tires.

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KING MOTOR CAR CO., Detroit, Mich.
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AGENTS—Some choice territory still open. Wire today.

KING

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Increasing demand is the most striking proof of a motor's worth.

Reprint of Article in Motor World September 4th, 1913

Making More Room for Hazard Motors

The Hazard Motor Manufacturing Company is erecting a 60 x 130-foot addition to its plant in Rochester, N. Y. The enlargement will permit the output of the Hazard Company's motors to be increased to approximately 5,000 a year. At present several departments are operating 20 hours per day to keep pace with the demand.

Ergon motors have made good for both pleasure cars and trucks. Send for complete data. Prompt deliveries assured.

Hazard Motor Manufacturing Company

Rochester, N. Y.

Packard CABLE

Always Makes Good

Nowhere does cable do its work under more unfavorable conditions than on an automobile or motor boat. Nowhere is it more vital that cable do its work with 100 per cent efficiency.

Packard Cable is built to meet the peculiar requirements of automobile and motor boat service.

The Packard Electric Company is the only concern which specializes and concentrates on the production of cable for ignition and lighting service on automobiles and motor boats.

We make a special cable for each and every service required.

If you use cable write for folder, samples and prices.

This hanger will be sent free to any car maker, dealer or starting or lighting system maker with the first order sent us.

The Packard Electric Co.

Dept. D WARREN, OHIO

This Hanger Free



This Hanger Free





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Notice to Customers Who Desire to Use "Whitney" Chains of the Silent Type

Copy of Circular Issued May 14, 1913

Since we commenced to market chains of the Silent type, we have made special effort to impress upon our customers the necessity for providing proper conditions for both chains and sprockets. We have pointed out that sprocket blanks must be turned to the right shape and that the teeth must be correctly cut. Sprockets should not have less than 15 teeth, should be larger if possible, and should be kept accurately in line. We have also urged on our csutomers the importance of selecting chains wide enough and large enough for their purpose and we have asked that in all cases customers make a thorough and exhaustive test before ordering in quantities to make sure that all conditions have been properly provided for. As a means to this end we have requested that the sprocket teeth be cut either by the customer or by The Whitney Mfg. Co. and not by some third party. In spite of these warnings we now find cases where our chains may fail to give complete satisfaction because some customers are already using them on improper sprockets, or have adopted chains too small in pitch or too narrow for their conditions.

We therefore desire to state that customers who do not follow our suggestion, but on the contrary secure sprockets wherever they please and possibly where they can secure the lowest price, are liable to obtain incorrect sprockets, so that at any moment we may feel compelled in such cases to discontinue shipments of chain, or insist that sprockets be sent to us for inspection at the customers' expense, before furnishing chain.

We will endeavor to force customers to use our chains on correct sprockets and to use chains of a sufficient size for the purpose even if we get certain customers into temporary difficulty. The ultimate result, however, we believe will be beneficial to all.

If a customer will explain the conditions for which our Silent chain is desired, we will be pleased to recommend a size of chain for trial, but, as stated above, we advise that chains shall not be purchased in quantity until a severe test has been made and the results found satisfactory.

In the early days of the Bicycle industry and when Roller chains were first used for the main drive on automobiles, certain customers used our chains on incorrect sprockets and we shielded them in every way possible, letting the chain take the blame for unsatisfactory results. With the Silent chain we will positively not follow this plan, and if customers adopt chains without making proper tests, and use them on poor sprockets, or under unfavorable conditions, they must take the consequences, for we certainly shall accept no responsibility in the matter, though such customers would, of course, have our sympathy and we would do our best to render assistance.

We must positively maintain our position, as outlined above, as we do not intend that our chains shall be unjustly condemned if we can help it.

THE WHITNEY MANUFACTURING COMPANY, Hartford, Conn.

SPLITDORF

"Always There"

Look before you leap

and study well the "make-up" of plugs before making another solitary purchase.

We invite the closest possible study, investigation and trial of SPLITDORF COMMON SENSE PLUGS—the "stand-by" of plugdom.

You will always find the insulation of SPLITDORF PLUGS is high quality mica and designed and manufactured to absolutely withstand the breaking down effects of high tension current.

The design of the SPLITDORF central electrode is proof against all expansion and contraction.

The construction of the SPLITDORF shell allows small space for gas and its shape prevents all trouble due to pre-ignition on account of red-hot metal parts.



The SPLITDORF PLUG is less liable to short-circuit from carbon deposits than any other form of plug ever put out by any manufacturer.

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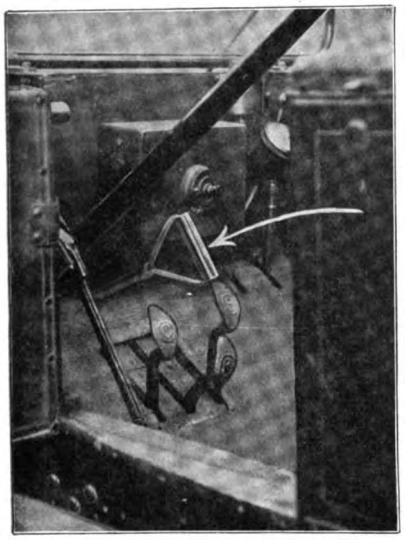
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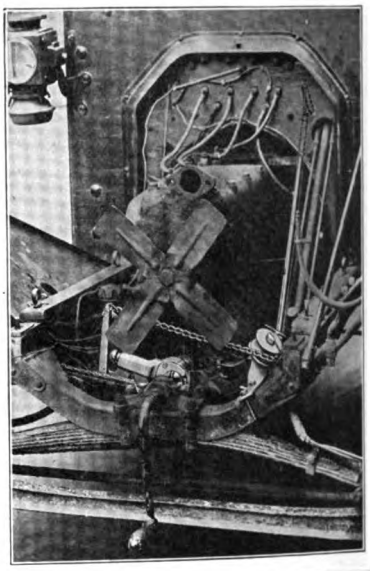
"It is out of sight," under the hood. All that shows is a small hand lever on dash. You do not have to leave your seat to start your FORD MOTOR when equipped with same.

All that is necessary is to pull the lever. Will POSITIVELY TURN YOUR MOTOR OVER EVERY TIME. With this starter YOU HAVE TWO STARTING DEVICES. YOU DO NOT HAVE TO REMOVE THE CRANK. **IT STAYS ON.**

FOR THE NEXT 60 DAYS TO THOROUGHLY INTRODUCE OUR STARTER WE WILL MAKE THE ABOVE PRICE.

NO MORE BROKEN ARMS. BACK KICKS ARE DANGEROUS.

DIRECT ON RECEIPT OF PRICE.



Dixon's Graphite Transmission Grease No. 677

This is as good as insurance on your transmissions and differentials, because it practically cuts out the grinding, wearing friction that soon destroys gears and bearings. More power goes to the wheels. Your car runs faster, easier, more quietly. Your mileage goes up and your repair bills come down. And your pleasure is multiplied as your car responds to the soothing influence of the fine graphite flakes. Have you a copy of "Lubricating the Motor," No. 23?



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Nine long years have been spent in making the

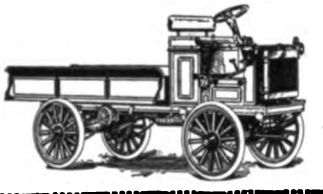
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Two sessions will be held daily. There will be editorial, circulation, advertising and publishing symposiums under competent leaders. Many of the leading editors, business managers, buyers and sellers of advertising, and authorities on modern merchandising methods will take part. On Friday afternoon, September 19, there will be a mass meeting with addresses by representative business and professional men, on subjects of timely interest to editors, publishers and advertisers. Distinguished guests and worth-while speakers will be at the annual banquet, which will be made a memorable social occasion. No matter what may be your connection with the trade journal field, if you are interested in the idea of business promotion through trade press efficiency, if you believe in business papers for business men, you will be welcome at all sessions.

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A plug which cleans itself, which burns the carbon as fast as it forms—a plug which doesn't require frequent replacement and which, under ordinary conditions, should last as long as your engine—the C. A. Mezger

"Soot Proof"

Soot Proof Spark Plugs are controlled by basic patents which make successful imitation impossible. Built with a double chamber. Therefore they offer three times the resistance of any other spark plug made.

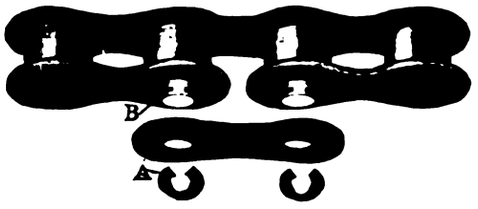
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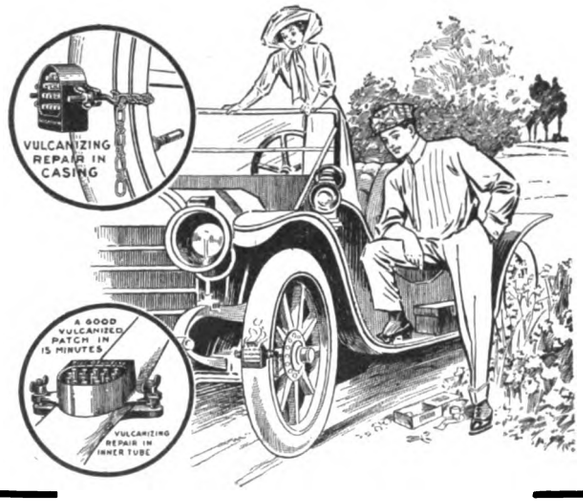
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THE Trade is hereby notified that the United States Patent Office has finally rendered judgment in favor of the Adamson Manufacturing Company, of East Palestine, Ohio, and on April 1st, 1913, granted to them Letters Patent No. 1,057,911, covering in broadest terms all types of casing and tube vulcanizers involving the principle of the Adamson Vulcanizers now on the market
You are hereby warned that we will vigorously enforce our exclusive right to this type of vulcanizer by prompt action in the Federal Courts, and you are hereby warned against selling or offering for sale any infringing device.

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Insures you against premature wearing out of tires.

It is TIRE INSURANCE FOR ONE DOLLAR

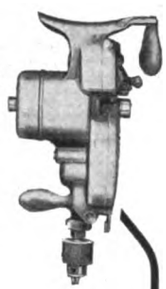


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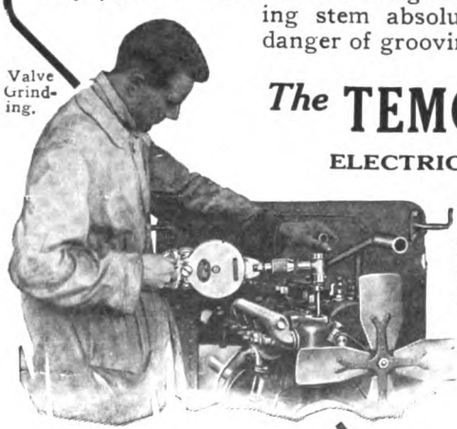
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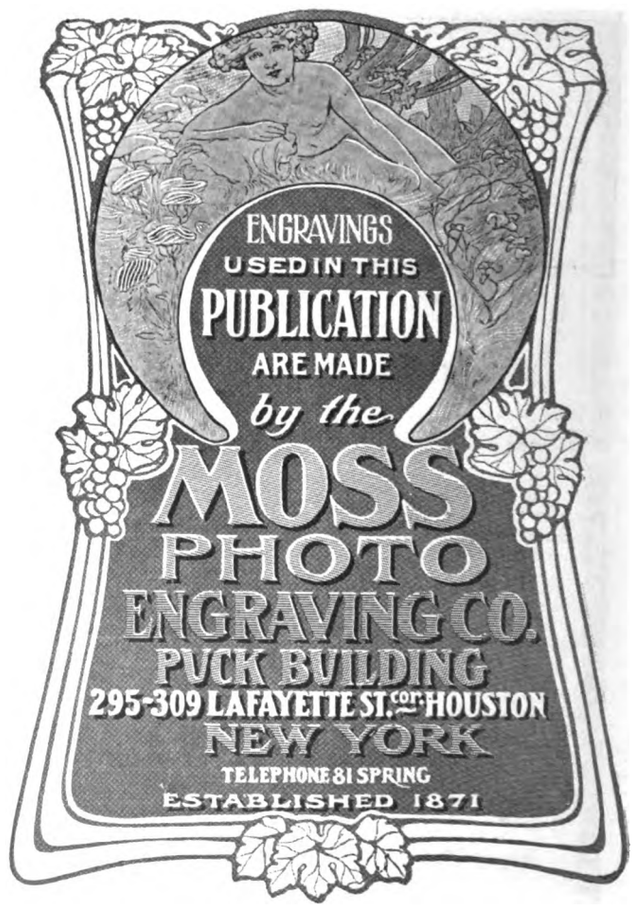
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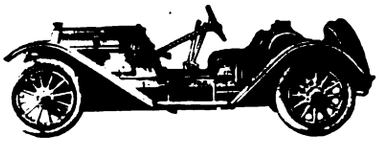
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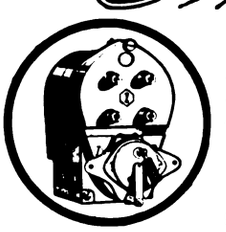
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for Ford Model T Cars

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It is perfect in construction; simple and easy to operate.

No danger from back-firing. No possible harm to the motor

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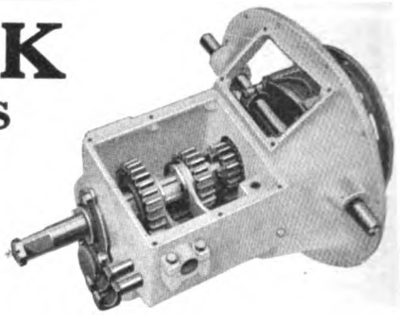
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Automobile Tires

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Southern Hdwe. & Woodstock Co., Ltd., New Orleans, La.
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H. R. Olmstead & Son, Syracuse, N. Y.
Bering Tire & Rubber Co., Houston, Texas.
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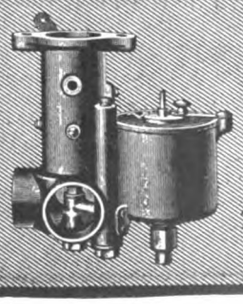
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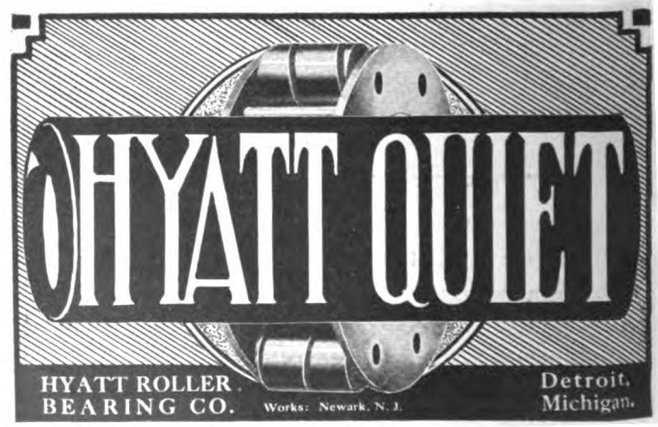


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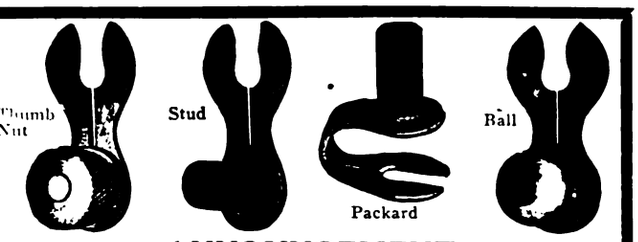
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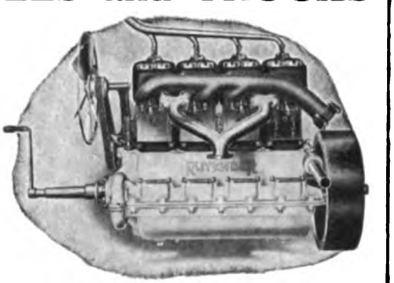
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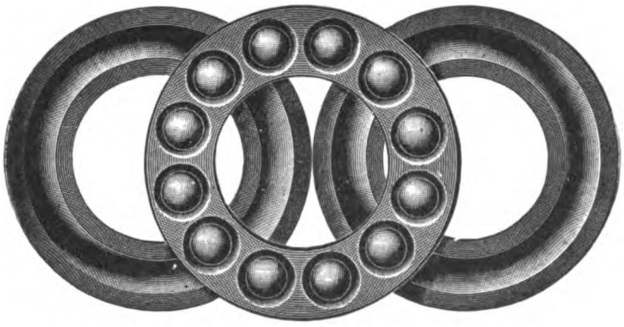
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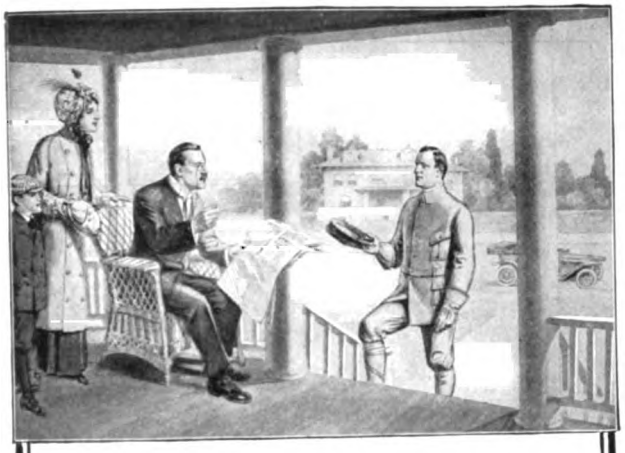
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Probably no other device has done so much to raise the factor of automobile safety as WEED CHAINS. They are the proverbial "ounce of prevention" against skidding, the cause of over ninety per cent of all automobile accidents—***Life Insurance*** and ***Accident Insurance Companies*** strongly endorse them and recommend their use. ***Taxicab Companies,*** for their own protection, ***insist*** that their drivers put them on when the streets are wet or slippery.

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The only inexpensive vulcanizer that actually **vulcanizes** a repair clear through because it is the only one in which the vulcanizing temperature is maintained long enough to cure the raw rubber. Its ever-present fuel, gasoline, is converted into a gas by the patent generator which distributes the flame over the vulcanizing surface at just the right intensity.

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Brightens and renews all leather seats and cushions. Will not wash or rub off. Dries in twenty minutes. THE COLUMBUS VARNISH CO., Columbus, Ohio.

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Our new Model B uses successfully half and half mixture lowest grades kerosene and gasoline. Satisfaction guaranteed or money refunded. Greatly increased power, very slow speed on high. Starts easy at zero. Special Agents' prices. Dept. 9. THE AIR-FRICTION CARBURETOR CO., Dayton, Ohio.

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For Pleasure Cars and Light Delivery Cars

Send for Booklet 58

A—Shows *double*, notched treads.
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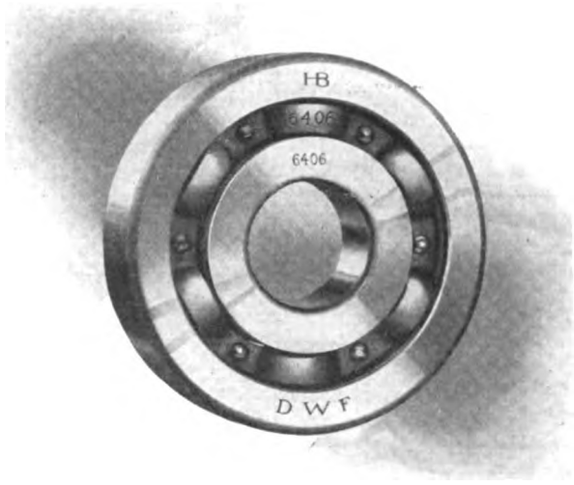
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Magneto Plugs coax maximum power out of engine.

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Chicago Electric	"Six"
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The KisselKar advertisement in the Saturday Evening Post of September 6th contains the following:

> —The Golde patent "one man" top, Warner speedometer, Klaxon horn, and many other earmarks of the highest priced cars are all manifest in the equipment of the KisselKar 60 "Six."

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It is found in the equipment of every high-priced car made.

And of every moderate priced car whose makers realize that known, advertised, STANDARD accessories are sufficiently important as talking points, as unmistakable indications of the car's quality, to warrant the additional cost.

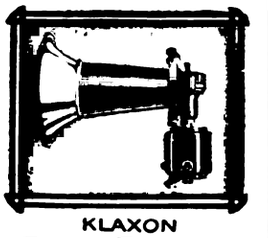


KLAXONET

Lovell-McConnell Mfg Company Newark, N.J., U.S.A.

KLAXON

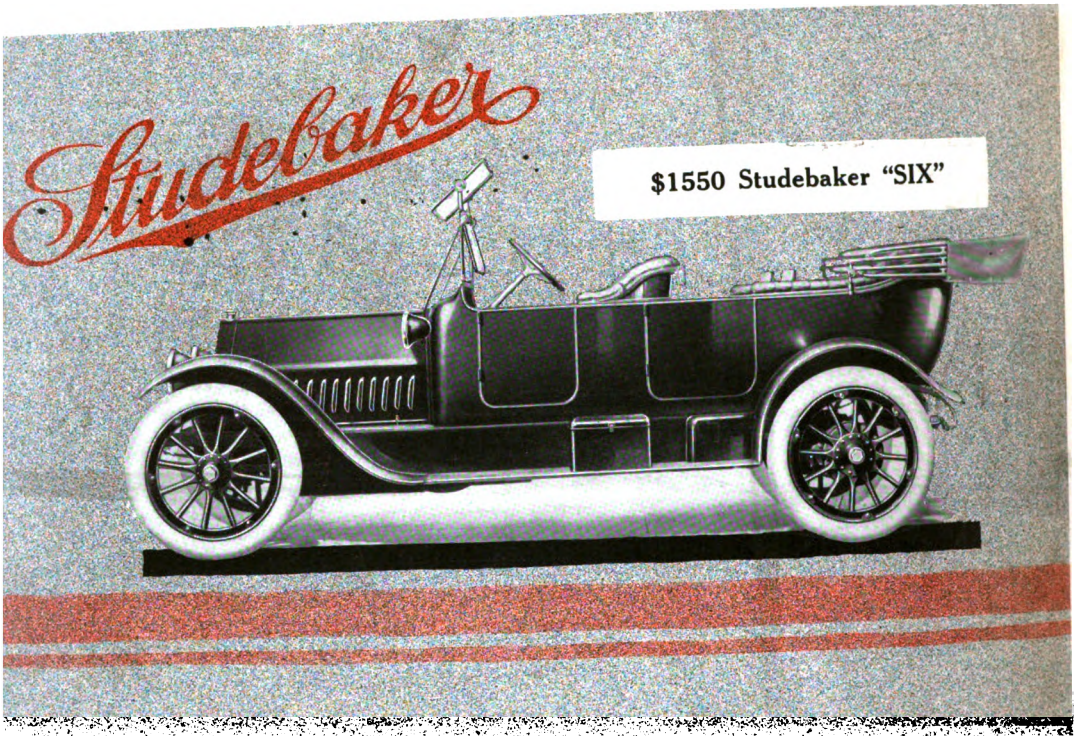
"The Public Safety Signal"



KLAXON

This advertisement planned, written and set up entirely in the Klaxon Factory. Type composition by the Klaxon Press with "Klaxon" type especially designed by Goudy.

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THERE are comparatively few business houses in the United States that can point to an uninterrupted business career of more than half a century.

—and, in addition, possess unlimited financial resources, and a world-wide reputation for integrity and the "square deal."

Stability, financial responsibility, integrity—are but a few of the reasons that make automobile dealers anxious to sell Studebaker cars. They have confidence in Studebaker and in Studebaker Service.

The confidence is felt by car purchasers as well as by the men who sell cars. That is why Studebaker cars are easy to sell. And—having sold a car—Dealer and Purchaser know that every aid and co-operation will be given by Studebaker to keep both Dealer and Purchaser satisfied.

THREE CARS

$885 Studebaker "25" $1290 Studebaker "35"

$1550 Studebaker "SIX"

Completely equipped f. o. b. Detroit

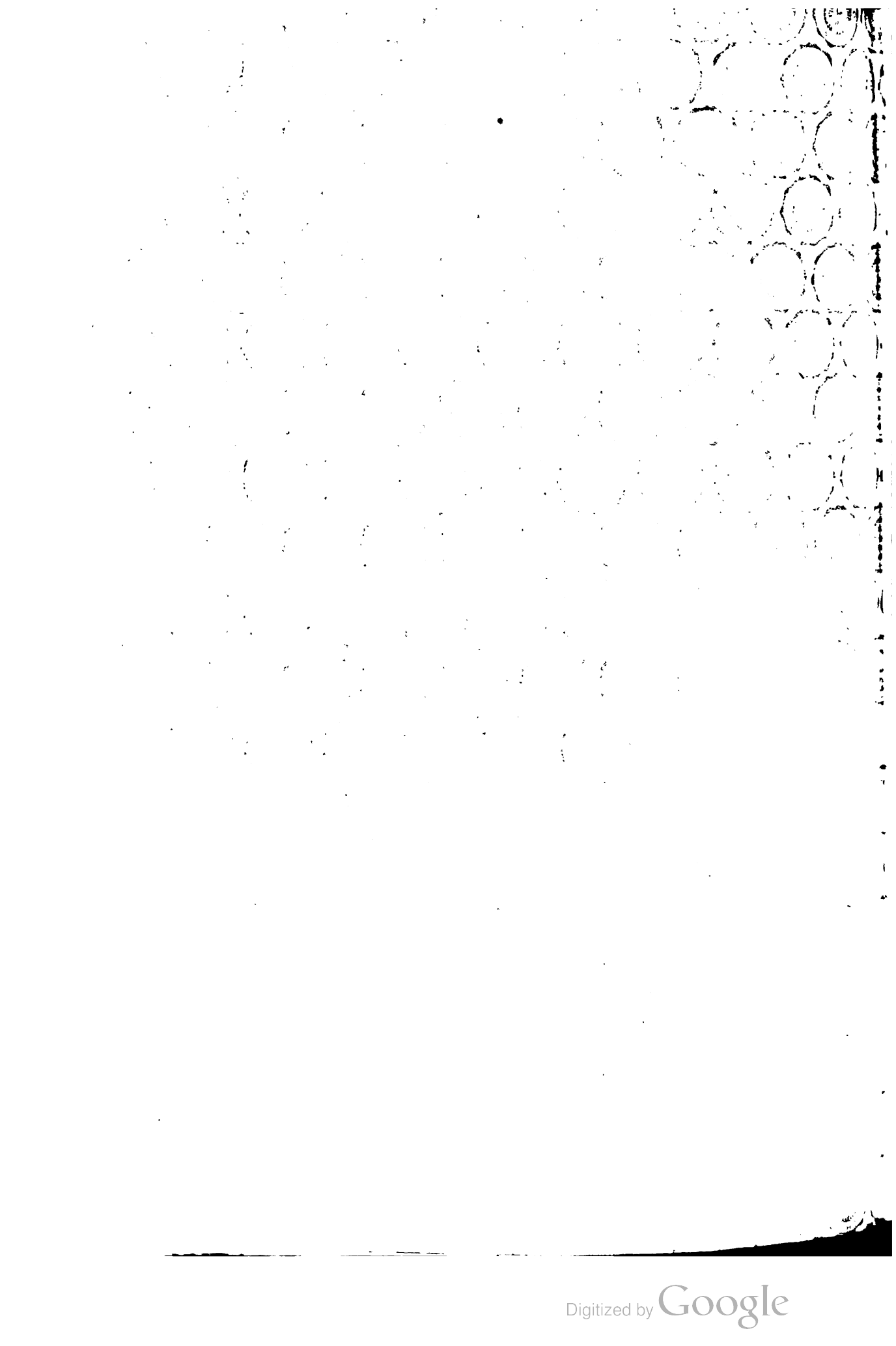
STUDEBAKER . . . . . DETROIT, MICHIGAN

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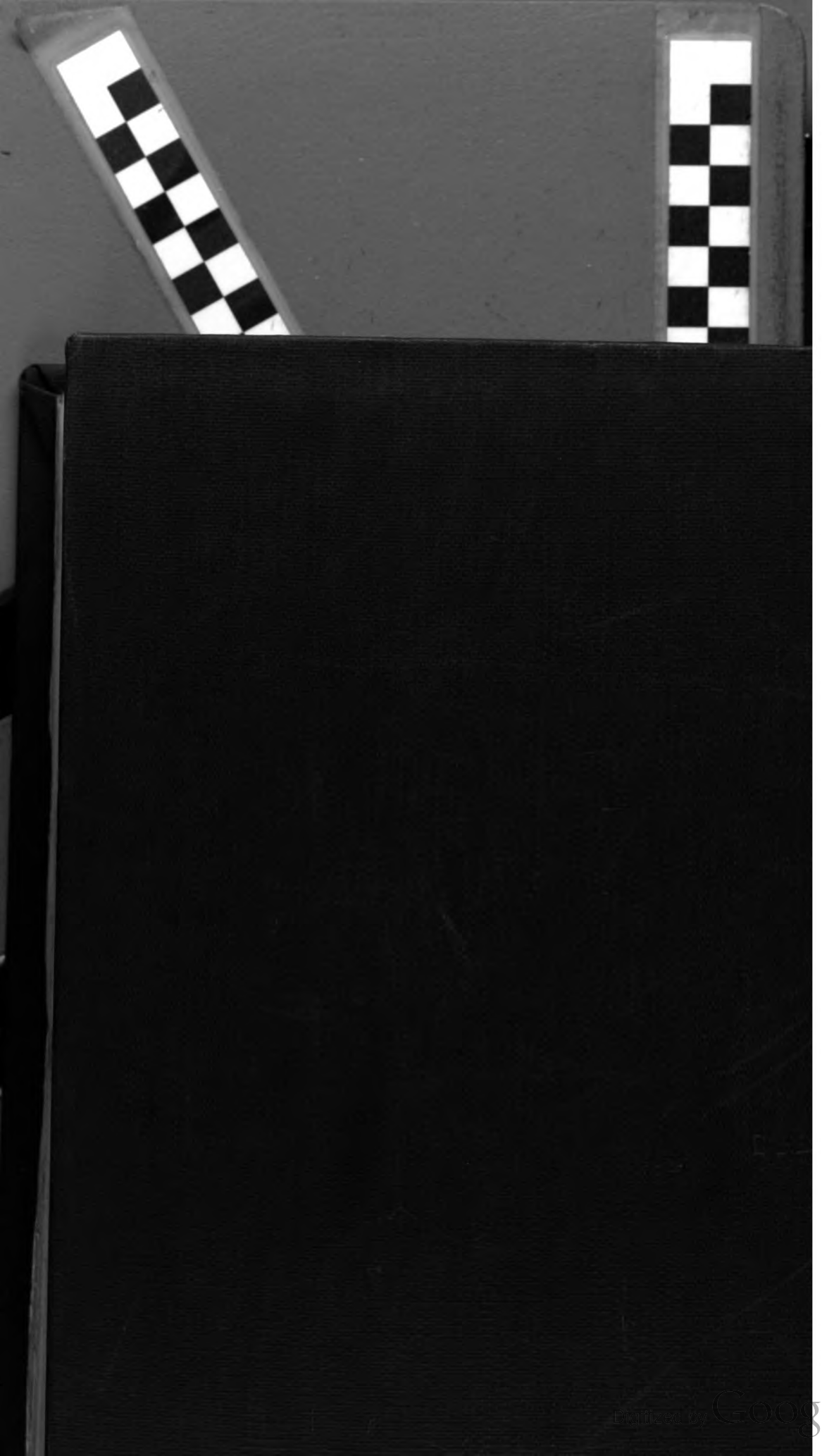


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